S. HRG. 106–964

EPA'S PROPOSED REGULATIONS FOR DIESEL FUEL

HEARING

BEFORE THE

SUBCOMMITTEE ON CLEAN AIR, WETLANDS, PRIVATE PROPERTY AND NUCLEAR SAFETY

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED SIXTH CONGRESS

SECOND SESSION

SEPTEMBER 21, 2000

Printed for the use of the Committee on Environment and Public Works

Available via the World Wide Web: http://www.access.gpo.gov/congress/senate

U.S. GOVERNMENT PRINTING OFFICE

71–525 dtp WASHINGTON : 2002

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2250 Mail: Stop SSOP, Washington, DC 20402–0001

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ONE HUNDRED SIXTH CONGRESS
SECOND SESSION

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C O N T E N T S

EPA'S PROPOSED REGULATIONS FOR DIESEL FUEL

THURSDAY, SEPTEMBER 21, 2000

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON CLEAN AIR, WETLANDS,
PRIVATE PROPERTY, AND NUCLEAR SAFETY,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:18 a.m. in room 406, Senate Dirksen Building, Hon. James M. Inhofe (chairman of the subcommittee) presiding.

Present: Senator Inhofe.

OPENING STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. I will ask that our subcommittee meeting come to order. We have some new deadlines to comply with, because of the action that the Democrats took on the floor. So we will not be able to continue this for a very long period of time.

This would not be a very long hearing, anyway. We have four witnesses. As you all know, this is the second sulfur and diesel hearing that we have had.

Our first hearing on this issue was June 15, where we concentrated specifically on the sulfur issue. Today, we will continue to look at the issue, but also examine the broader issue of the diesel engine side of the regulation and, I think, the supply side. I do not believe we got into that, to the extent that we wanted to do it.

When we held our last hearing, gas prices were at a record high, since the Gulf War. President Clinton predicted that the prices would drop by this Fall. It is now September, and the prices per barrel are even higher. Last week, it hit $35. I was told yesterday, it is $37. So he was wrong at that time, and it has gotten completely out of hand now.

I previously criticized this Administration, but I hasten to say, I also criticized the last Administration, the Bush Administration, and the Carter Administration, because in all those Administrations, I tried to encourage them to have a national energy policy, and they elected not to do it.

We are going to have to have it. I believe, certainly, if "George W" is elected, that we will. I have personally talked to him about that.

Now it appears that the EPA's plans to finalize this regulation are only an attempt to make political headlines and to appease spe-

cial interest groups in an election year, instead of crafting a workable solution for diesel pollution.

They know full well that future Administrations will be forced to change the regulations, because this proposed regulation, if enacted, would so severely limit the supply of diesel fuel, that it would cause price hikes and shortages, leading to disruptions in delivery of products and goods across the country.

Based on the testimony from the last hearing and discussions I have had with numerous groups, let me explain just a few of the major problems with this proposal.

First, the EPA will require the implementation of the sulfur diesel rule at the same time as the sulfur gasoline rule. This would, I believe, impose great capital problems, investment problems, on the refining industry. It could, at the same time, have an adverse effect on the supply and create shortages.

Second, the technology review will be necessary. It is unsure whether or not the new load diesel engines will work; meaning that the low sulfur fuel would not be necessary. Most refiners will probably wait for the technology review before expending resources on the desulfurization technique. This means if the technology works, we may not have the low sulfur fuel available yet, creating additional shortages.

Third, for many refiners who operate on the coast, and I am talking about the East Coast and the West Coast and the Gulf Coast, those refineries are going to have problems created for them. They could make the decision to go ahead and continue to refine the products, under the current laws and rules, and just go to the export markets, to other countries, where they do not have these requirements. Now that would have another devastating effect on the supply.

It is my understanding that we are pretty close to 100 percent refining capacity, right now. I think if that should happen, then for some of the smaller ones, we will have a witness talking about some of the problems that are created for smaller refineries.

If some of them should have to close, or if they are forced to export their products to other countries, then that would cause a shortage, and certainly cause price spikes. You will see, this is the chart we used in the last hearing on June 15th. You can see all the factors that come into play.

After today's hearings, I am going to be sending a list of concerns to the EPA regarding this issue. If they do not address these concerns in the final rule, I will use the congressional Review Act, early next year, to veto this regulation.

Now the congressional Review Act is one of our ideas that if a bureaucracy goes out and passes regulations that are just totally unlivable, and are wrong and against the intend of the appropriate committees, then the committee of jurisdiction can have virtual veto power, merely by holding a committee meeting and stopping that regulation, and then taking it at the same time to the floor of the House and to the Senate. So it could all happen in 1 day.

I am just not making that as an idle threat. I am just saying that we have to have certain problems resolved and addressed by the EPA. So I will serve notice that I will use that provision, that Act, if it becomes necessary. I hope it does not get to that.

Now I would like to have our four witnesses come to the table. I would have to ask, is it Ms. Vujovich?

Ms. VUJOVICH. It is Vujovich.

Senator INHOFE. Vujovich? Well, I met you the other day in the hall there, but I do not think I got the proper pronunciation.

Very good, the way we are divided up today, we have Mr. Ronald Williams, president of Gary Williams Energy Corporation; Mr. Paul Rogers, chief operating officer of Voss Companies, Inc., on behalf of the National Association of Truck Stop Operators; Mr. Richard Kassel, senior attorney for the National Resources Defense Council; and Ms. Christina Vujovich, vice president of environmental policy and product strategy for Cummins, Inc.

While the panel is taking their chairs, I am going to ask you to limit your opening statements, because of this new problem that we are confronted with, to 5 minutes. We will play the "stop, change, go" sign with the lights. My granddaughter likes that. So if you would comply with that, we would appreciate it very much.

We will start with Mr. Williams.

STATEMENT OF RONALD WILLIAMS, PRESIDENT, GARY WILLIAMS ENERGY CORPORATION

Mr. WILLIAMS. Good morning, Mr. Chairman.

Senator INHOFE. Good morning.

Mr. WILLIAMS. I am the CEO and an owner of Gary Williams Energy Corporation, a Denver-based refining and marketing company. Our principal asset is a 50,000-barrel-per-day refinery located in Wynnewood, OK. We have 275 employees in our company and, therefore, qualify as a small business refiner.

While our industry supports the clean air benefits of lower sulfur fuels, we believe the EPA's haste to force the use of unproven engine technology is driving overly stringent and unreasonable fuel standards.

We believe prematurely setting a 15-part-per-million cap on highway diesel fuel will result in significant fuels shortages and skyrocketing prices.

Industry experts estimate prices in some regions of the country will triple over current levels. This rule will hurt all those who rely on highway diesel fuel—truckers, distributors of goods and services and, ultimately, consumers, jobs, and our economy.

The 15 part per million diesel cap is unreasonably low and is really not supported by credible cost benefit analyses. Our own Department of Energy projects the industry will have to spend $8 billion in refinery capital improvements to comply with this proposed rule; a number which is three times what the EPA has publicly estimated.

Senator INHOFE. Is that the whole industry?

Mr. WILLIAMS. Yes.

Senator INHOFE. What is your figure?

Mr. WILLIAMS. Our figure for our refinery, for diesel fuel alone, is about $48 million.

Senator INHOFE. That is the sulfur and diesel. How about in sulfur and gas?

Mr. WILLIAMS. Gasoline and benzine, together with diesel fuel, would total approximately $90 million.

Senator INHOFE. Thank you.

Mr. WILLIAMS. Obviously, with this kind of a capital investment for all sizes of refineries, our fear and, I think, the country's fear, should be that many will shift out of the highway diesel market, and dump their high sulfur product in the off-road market. We are concerned this will allow us to not meet the highway diesel demand, and we will have a severe shortage.

Our estimates in the industry are that if this rule is passed on diesel alone, we will have anywhere from a 10 to 30 percentage shortage over the projected diesel highway demand.

Right now, our refineries, as you mentioned earlier, are operating at nearly full capacity. They are running about 95 percent, which has historically not been something the industry can sustain on an ongoing basis, without severe upsets.

The industry has asked the EPA to take three critical steps. One is to conduct a thorough technological review of engine and emission systems, as well as refinery desulfurization technology, prior to finalizing this rule. Two is to set reasonable and cost effective standards for vehicles and fuels. Three is to set a diesel sulfur implementation date that does not overlap the gasoline sulfur requirements.

We do not think the EPA will respond to these urgent recommendations without congressional intervention.

As I earlier said, small refiners such as ours share the same concerns as the majors, but our problems are proportionately greater, merely by the fact that we are smaller.

As you asked and I responded, our cost to comply with the diesel desulfurization rule will be about $48 million. In addition, it will increase our annual operating expenses in the refinery by about $6 million to $7 million. That number is equal to the historic annual net income of that facility.

As has been the case with past environmental investments, we are unlike to recoup these in incremental capital and operating costs in the future.

When we combine these with the money that we will have to spend in our facility to take the sulfur out of gasoline, and to deal with the benzine rules, we will be looking at about $90 million of expenditures, over a 5-year period, beginning in 2003. That will be very difficult, if not impossible, to obtain financing for that.

It is clear that the major oil companies' size, diversification, and integration create a competitive advantage over the small refiners. However, the small refining segment of the industry has played an historical, essential rule; that of providing pricing competition.

Often, the small independent provides the lowest wholesale price in the market for gasoline and diesel fuel. Also, small refiners fill important niche markets, such as providing military jet fuel.

Nationally, the small refiners only comprise about 4 percent of the diesel market, but they provide 20 percent of the military jet fuel, which we believe is an important strategic issue for our country.

We are concerned that with this proposed rule that heretofore highway diesel fuel will become "non-spec." It will not be further processed, and will be dumped into the off-road market. If that is

the case, we will have, as I indicated earlier, severe shortages of highway diesel.

That will also create greater competition for the small refiners, because historically, we have been the ones to provide the off-road diesel fuel for our country. We will have increased competition from the major refiners.

We do believe, as an industry, especially the small refiners, that if these rules are adopted by the EPA, that anti-dumping provisions of high sulfur diesel should take effect, if nothing else, to preserve the ratio between on-road and off-road diesels, so as to mitigate any on-road diesel shortages.

We also, as a small refining industry, believe that it is imperative that, at this time, Congress is going to need to consider some kind of tax incentives in order for these expenditures to take place, if the rules go forward.

Thank you for the opportunity to speak. I will answer any questions that you may have.

Senator INHOFE. Thank you, Mr. Williams.

Mr. Kassel?

STATEMENT OF RICHARD A. KASSEL, SENIOR ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL

Mr. KASSEL. Thank you, Mr. Chairman. My name is Richard Kassel. I am a senior attorney with the Natural Resources Defense Council, a national non-profit environmental advocacy organization, with over 400,000 members.

NRDC strongly supports EPA's proposal, because it will be the equivalent of removing the pollution from 13 million of today's trucks from the air. It will result in the elimination of over three million tons a year of smog-forming gases, and over 100,000 tons per year of asthma attack-inducing particulate matter.

Why is it so important to clean up the nation's dirty diesels? I get asked that question all the time. Diesel's particulate matter has been linked to increased asthma attacks and hospitalizations, bronchitis, cancer, endocrine disruption, emphysema, and even premature death.

Diesel's nitrogen oxides are a contributor to ground level ozone or smog formation, acid rain, and nutrient pollution in our waterways. More than 40 toxic chemicals are typically found in diesel exhaust.

The key to this proposal, of course, is sulfur. Just as lead was a barrier to cleaner cars, and lead and gasoline was a barrier to clear cars two decades ago, sulfur in today's diesel fuel is a barrier to cleaner trucks and buses.

So we strongly support EPA's proposal for many reasons. First, only the near elimination of sulfur, which we believe is a cap of 15 parts per million or less, will create a fuel supply that is clean enough to support the most promising emission controls.

Second, we believe only a national approach will work, given the mobility of the vehicles, themselves. Truckers deserve to know that wherever they drive, they will be able to get the low sulfur diesel fuel.

With a national fuel supply, mislabeling, misfueling, and fuel supply contamination concerns would be eliminated which, of

course, would respond to some of the concerns, particularly of the retail fuel sellers.

By including interim dates for refineries and for terminal suppliers, we believe EPA has taken into account some of the supply chain issues that have been raised by the subcommittee, and is providing a clear and a useful road map to implementing this rule in a way that will avoid market disruptions.

Third, we need the rule in mid–2006. The timing is right to get the fuel into the supply in time for those model year 2007 engines, and to help States that will be attempting to meet, attain, and maintain their Clean Air Act obligations for ozone and particulate matter.

In contrast to EPA's proposal, the oil industry has suggested 50 parts per million as a cap. We believe that would render the proposed particulate and NOx targets unachievable. Under the oil industry proposal, particulate traps will clog, and failure will become a serious problem.

Likewise, plans to develop the most promising NOx controls, which are currently something called a NOx absorber, will shift from NOx absorbers to less effective selective catalytic reduction, or SCR. Not only is SCR less effective, but it will require the development of a national urea infrastructure system, that would cost billions of dollars to install and operate and maintain.

Regarding the oil industry, I would just like to respond to some of the industry concerns. The first, of course, is the cost; that the industry cannot afford the cost of updating its refineries.

America's largest oil companies reported nearly $12 billion in profits in just the first quarter of this year, and the Wall Street Journal reported that those profits will be higher in this quarter.

We believe that the cost of this program is a reasonable cost of continuing what is obviously an extremely profitable business, especially because of the environmental benefits.

Second is the burden on the American consumer. BP, the nation's largest seller of diesel fuel, has already announced that it will sell 15 PPMs, sulfur diesel fuel, in California next year at an incremental cost of roughly a nickel a gallon, without the economy of scale benefits of a national fuel.

Tosco has announced that it will do the same in 2003, at a better return on capital for its investors than its current high sulfur fuel.

This is a very far cry from the doomsday predictions of the American Petroleum Institute. I think it is important to note, there are many examples of environmental regulations, over the past three decades, where regulated industries have said that it cannot be done, and if it can be done, it will cost too much.

Once the policy decision is made, the companies and the industries find a way to produce the product at a reasonable cost. We are already seeing this in the oil industry, with the examples of BP and Tosco.

Last, comments from some other opponents have asked you to slow down the process, to not act this year, because the technology is not ready. I refer you to the testimony in the EPA hearings by the Manufacturers of Emissions Controls Association, or MECA.

MECA represents the companies that will develop and commercialize these technologies. MECA supports the proposal, and has

said that they believe that its members will be able to meet the requirements in a timely and cost effective manner.

There is even evidence in the record that Cummins is already hard at work on NOx absorbers and other technologies, and that their presumptive emission targets for its R&D program are already as low as EPA's targets; that it believes that NOx absorbers are viable, based on in-house data; and that it believes that a sulfur level of 50 parts per million would be deleterious to NOx control systems.

The bottom line, in conclusion, is this. The diesel industry seems to hate when environmentalists call diesels "dirty diesels." But it is fighting every step EPA takes toward cleaner diesels.

Cleaner diesels may be possible, but only by adopting EPA's proposal by bringing sulfur levels down to a level that allows the most promising technologies to succeed, and by meeting its goals and the timetables of that proposal.

Every year of delay on industry's part, there are more avoidable asthma emergencies and more avoidable cancers. We need this rule. We need it finalized this year, so the companies can get to work, so they can lock in their R&D budgets, and they can lock in their capital plans for the coming decade.

Thank you.

Senator INHOFE. Thank you, Mr. Kassel.

Mr. Rogers?

STATEMENT OF PAUL ROGERS, CHIEF OPERATING OFFICER, VOSS COMPANIES, INC.

Mr. ROGERS. Good morning, Mr. Chairman. My name is Paul Rogers. I am the chief operating officer of Voss Companies, a small family owned business in Cuba, Missouri.

The Voss Companies owns and operates three travel plazas and truck stops in the Midwest, along with a small chain of convenience stores. We employ approximately 275 people throughout our operation, and sell approximately 45 million gallons of diesel fuel at the retail level each year.

Personally, I have over 26 years of experience in the truck stop industry. I appear before the subcommittee today on behalf of NATSO, the national trade association representing the travel plaza and truck stop industry. NATSO represents over 400 companies, which operate approximately 1,200 travel plazas and truck stop locations nationwide.

As the primary retailer of highway diesel fuel, the truck stop industry is, of course, a vital link in the transportation of goods and services throughout our country. The vast majority of our nation's products are delivered by diesel-powered vehicles; everything from the clothes we wear to the food we eat. So the old adage, "If you have got it, a truck brought it" is absolutely correct.

Our nation's travel plazas and truck stops are a critical link in the movement of these goods in providing the fuel needed to keep these trucks and our economy running smoothly.

While the travel plaza and truck stop industry supports efforts to reduce emissions, NATSO has serious concerns and objections to the EPA's proposed diesel sulfur regulations, and the effect it will have on our nation's energy supply and delivery system.

EPA's rule could reduce overall supplies of diesel fuel, lead to significant spot outages, and significantly increase the cost of diesel fuel and other distillants. NATSO is very concerned that this drastic 97 percent reduction in the sulfur content of highway diesel fuel would seriously disrupt the nation's industries ability to consistently and reliably acquire highway diesel fuel for sale for our nation's vehicles.

The investment which refiners will need to make in order to reduce sulfur levels by 97 percent may force many of these refiners to opt-out of the highway diesel market and, instead, focus on other market segments for product production.

Further, some refineries may cease operations altogether. With our nation's current fuel supply strained as it is, the loss of an additional diesel production supply would be devastating.

I would point out, in the St. Louis market alone this summer, the EPA had to drop its regulations on RFG three times, because the market could not supply and did not have the ability to supply the product into the market.

Additionally, due to its intricate structure, it does not appear that our nation's diesel fuel distribution system can maintain ultra-low sulfur highway diesel fuel supplies in all areas of the country on a reliable basis. This is a very serious problem, which could lead to fuel cross-contamination, spot outages of highway diesel fuel, and severe price hikes.

Furthermore, under EPA's proposed 97 percent reduction in sulfur levels, domestic highway diesel fuel will have a lower sulfur level than highway diesel fuel produced in most other nations. This would essentially prohibit the influx of foreign supplies of diesel fuel, which could otherwise be used to ease those shortages, and help with domestic production and supply.

Ultimately, under EPA's proposal, less diesel fuel will be produced and supplied, driving up prices and cost, endangering the integrity of our nation's energy supply and delivery system.

The EPA, in a misguided attempt to address the problems which result from the extreme sulfur reduction proposal, has sought comment on various phase-in schemes, which would result in the temporary manufacture, sale, and use of two separate grades of highway diesel fuel.

These scenarios would allow the current 500 parts per million highway diesel to continue to be produced, alongside the new ultra-low sulfur diesel for a period of years, until it is eventually phased out in favor of the new lower sulfur fuel.

NATSO is strongly opposed to these phase-in schemes, as they would provide a devastating effect to the diesel fuel distribution system, including travel plazas and truck stops, which have the net effect of further reducing supply.

One of the things that is very critical to note, Mr. Chairman, is that the entire diesel fuel delivery system in our country, from refinery to retail, is currently handling a single grade of highway diesel fuel.

Because the travel plazas and the truck stop industries are also configured to carry only a single grade, the introduction of a separate grade would force the truck stop travel plaza industry, and

many thousands of retailers, to make tremendous capital investment to carry both products at retail.

Significant expenditures at a minimal excess of $100,000 per location, in many cases, would need to be made to ensure that these separate grades of diesel are properly segregated to prevent their cross-contamination and overt misfueling at the pump.

This would result in the need for new storage tanks, the re-piping and re-manifolding of tank lines, new pumps, monitors, significant compliance expenses. In many cases, the permits for such a mandate would be unattainable.

What really concerns our industry is the cost, which would be borne by an industry which largely consists of small, independent owner-operator folks, not big, huge corporations with billions of dollars of profit. They are still recovering financially from the 1998 upgrades that were forced upon them by EPA to upgrade our fuel systems.

NATSO urges the subcommittee to express to EPA your opposition to these phase-in schemes, which would result in the temporary manufacture, sale, or use of two separate grades of diesel fuel. This phase-in would place at risk the integrity of our nation's diesel fuel supply, raise costs throughout the distribution chain, and reduce the overall supply.

In such a short period of time, most businesses would not have the opportunity to take the proper valuation on the expense that they put into it.

NATSO does support efforts to improve our nation's air quality, without placing our energy supply and delivery system at risk. The petroleum industry has stated its support for a 90 percent reduction in the sulfur level, from 500 parts to 50 parts. Such a reduction, if it occurs without a two-fuel phase-in scheme, and with significant lead-in time for refiners and the emission control manufacturers, would achieve significant reductions in emissions, while maintaining the integrity of our nation's diesel fuel supply.

Sir, on behalf NATSO, I thank you for letting me speak. If there are any questions, I would be glad to answer them.

Senator INHOFE. Thank you, Mr. Rogers.

Ms. Vujovich?

STATEMENT OF CHRISTINA VUJOVICH, VICE PRESIDENT, ENVIRONMENTAL POLICY AND PRODUCT STRATEGY, CUMMINS, INC.

Ms. VUJOVICH. Good morning, Mr. Chairman. For the record, my name is Christina Vujovich. I am the Vice President for Environmental Policy and Product Strategy for Cummins Engine Company.

I appreciate the opportunity today to speak to you in regard to EPA's heavy duty engine emission standards for 2007 and the diesel sulfur proposal. Obviously, my comments will be more directed toward the emission piece of this rulemaking.

Cummins is the only independent diesel engine manufacturer in the United States today, and we are the largest producer of commercial engines over 200 horsepower.

Contrary to the inference made by Mr. Kassel, I would like to say that Cummins does share the goal of improving our air quality, and we really support EPA's authority to regulate emissions from

heavy duty diesel engines. As a company, we are absolutely committed to pursuing the technologies that benefit the environment; evidence the information, again, referenced from our written submission to EPA.

These technologies, however, must also provide superior performance for our customers, including fuel economy. Otherwise, our customers will not purchase the products.

This is why we have very serious concerns about the rush to finalize these rules by the end of the year. The schedule that EPA has established for finalizing these rules does not allow us the time for the work that we believe is necessary to assess the technical feasibility and the commercial viability of the technologies required to meet the standards.

So we are urging EPA to provide an additional 18 to 24 months before they promulgate the final rule, so that the stakeholders can assess these issues, which we believe are extremely critical to the success of the ultimate rule.

To proceed otherwise would result in a rule that is unworkable and that undermines the important goal of reducing emissions and improving air quality. EPA can do this and still have time for a rule that is applicable for 2007.

Mr. Chairman, I would like to make an important distinction here. As a company, we are not asking EPA to delay the implementation date of this rule. We are merely asking EPA to take the time, before it promulgates the final rules, so that technology can be better assessed and understand the viability of the technology.

For more than 20 years, my work at Cummins has revolved around the environment. That is very challenging work, because we provide a technology essential to moving the nation's economy, but it is also a technology that has environmental implications. We are the first to recognize that.

That is why at Cummins, we have a corporate mission statement, which dictates that everything we do leads to cleaner, healthier, and safety environment. Our engineering and development budget each year is about 4 percent of our annual sales. Well over half of that goes to emissions development.

The work done at our transient emissions labs in the Cummins Tech Center in Columbus, Indiana is world class, and our engineers are regularly called on to advise government experts worldwide, which we are pleased to do.

When EPA needs to train its technical staff in the fundamentals of internal combustion for diesel engines, it turns to Cummins. Indeed, EPA researched the very rule we are here to discuss on a Cummins six-liter engine.

Now you might ask, why is all of this important? While many of you may know us and are familiar with this company, those of you who are not do not know that it simply is not our nature to say no.

However, today, we are compelled in this instance to speak out strongly and ask, why do we have to rush to this rulemaking? Do not jeopardize the success of this rule in order to meet an arbitrary deadline.

This rulemaking represents some significant firsts for our industry. This rule, for the first time, recognizes that fuel and engine

technology must work together to achieve emissions reductions. For this, we applaud EPA, because the ultra-low NOx standards and the ultra-low particulate standards, which we are all interested in achieving, cannot be met without significant reduction in diesel fuel sulfur.

For the first time, these proposed regulations cannot be achieved through in-cylinder and engine subsystem control technologies. That means, as an engine producer, we have to look for after-treatment suppliers to do this work for us.

In order to achieve the proposed regulations, we will have to rely on technologies that we neither make or install on the engine, when we ship it from our factories.

Second, these technologies do not exist in a commercial way today; nor, do they exist in a manner that we can predict, with confidence their capability of achieving these emission reductions over 435,000 miles, which is the useful life of heavy duty engines.

The diagram to my left shows our current best estimate of the system of after-treatment devices necessary for compliance to the 2007 rules. As you can see, there are four sequential catalytic activities that we expect the exhaust gases to have to go through.

We can only guess as to what the impact the envisioned system of after-treatment technologies will have on our engine performance and fuel economy, because many of these technologies are still in their very early stages of development. We know that, because we do a considerable amount of work on our own in our labs.

But today, we do not know whether or how a commercially viable product can be made to meet these proposed standards. Yet, we are being asked to agree to this rule before the end of the year, and in so doing, agree that we will certify the emissions capability of our engines, including the yet-to-be-developed after-treatment systems that we neither make or install, over the 435,000 mile useful life of heavy duty engines.

There is no doubt that the after-treatment technology shows potential. We believe that an additional 18 to 24 months will put us in a better position to evaluate the issues critical to the success of this rule.

Cost is very significant for our industry, as well as the petroleum industry. Individual component estimates today indicate costs for our products will be four to five times greater than that which EPA has predicted.

For truckers who already operate on extremely small margins, most of the time in the 2 percent range, this is not a commercially viable option.

The net result will be that diesel engine customers, who would normally replace their engines in the 2007 or 2010 timeframe, will likely re-build older engines, rather than replace newer ones.

That is not good for anyone. Because the only way you get cleaner engines into the marketplace is if someone buys them. The potential of this impact of such action is significant, and really has not been adequately addressed yet.

At Cummins, we have an 80 year history of delivering on what we promise. Cummins wants to participate in a successful rulemaking and a successful low emissions product development effort.

Our question today to the EPA and to the people in this room is whether it is more important to rush to finalize a rule which, on paper, promises significant emissions reductions; or whether it is better to take the time to develop a rule that in reality will deliver real emissions progress.

Thank you, Mr. Chairman. I will be happy to answer any questions.

Senator INHOFE. Thank you, Ms. Vujovich.

I guess the first thing I should ask you is, do you have a response to Mr. Kassel's characterization of dirty diesels?

Ms. VUJOVICH. Yes, sir, I do. I think it is important to note that the diesels of today and diesels of the future are not what I would characterize at all as dirty diesels.

The diesel emissions control technology, over the last 15 to 20 years, has reduced diesel exhaust emissions nearly 90 percent. With this rulemaking, it will be 90 percent from the 2004 levels that we are expected to achieve. Perhaps Mr. Kassel's characterization is more relevant for the older diesels that are still in the fleets.

Senator INHOFE. You know, while this chart is still fresh in our minds, I want to make sure I understand it. You are saying that with the application or installation of all of these four technologies, whatever they are called, you are required them to still have a 435,000 mile engine life?

Ms. VUJOVICH. Yes, sir, in the 2004 rulemaking of EPA, the heavy, heavy duty engines, as defined by EPA, and EPA has three classes of heavy duty engines: light heavy, medium heavy, and heavy, heavy, it is the heavy, heavy duty engines that went from a useful life of 290,000 to 435,000. We are required to certify that the emissions from those engines meet EPA's requirements for 435,000.

Senator INHOFE. And if they do not?

Ms. VUJOVICH. If they do not, and EPA is assessing our products in use, or if we understand that our products do not comply, there is either a voluntary recall, or EPA can impose a recall on our products.

Senator INHOFE. Mr. Williams, it is my understand that the highway diesel sulfur proposal overlaps with the gasoline sulfur schedule. Are there any economies of scale for having both of these at the same time? What is the impact by having both of these going in at the same time, as far as you are concerned?

Mr. WILLIAMS. There really are no economies of scale, Mr. Chairman. They treat two different streams. One is for diesel, obviously, and one is for gasoline. The units that have to be installed for each stream are specialized. So there is no economy of scale of getting two for one.

The timing of it is such that we are not only forced to deal with two, but we are forced to deal with two streams at the same time, and incurring charges, as I indicated earlier. But there is no common usage of any of the capital expenditures that would be required.

Senator INHOFE. So not only, if I understand your answer correctly, is there not an economy of scale, but if you had to comply at a different time, it would be easier. I mean, it would be more

expensive doing it at the same time, as opposed to less expensive. I heard the argument.

Mr. WILLIAMS. That is exactly right. I made that comment in my presentation, that it needs to be sequential, and not simultaneous.

Senator INHOFE. I am also concerned about availability. I hope you all have a chance to address this. I am concerned that the EPA has not really adequately considered the effect of this rule on the availability of diesel. When they consider the cost, they sometimes say, five cents a gallon.

However, with refining capacity nearly at 100 percent right now, I would question that. You know, we talked about some of the coastal refineries choosing to go ahead and not apply this, and go to markets where it is not required, which I think is something that could happen; and also, some just going out of business.

So what is your concern about this effect on the ultimate supply?

Mr. WILLIAMS. Well, undoubtedly, many refiners, both large and small, will choose not to make the full financial investment to upgrade their total stream of diesel. So the result of that will be that there will be more off-road or high sulfur diesel in the marketplace, and there will be less low sulfur diesel in the marketplace.

That will put the strain on the highway diesel fuel system. There will be a shortage, undoubtedly. I mean, I have talked to my peers in the industry. I have talked to all of the experts, in terms of the independent studies that have been done. We get the same answer.

Refiners are going to look at this on a case-by-case basis. Different companies will do different things. But they all unanimously agree that there will be a shortage of highway diesel.

Senator INHOFE. Mr. Rogers, the same question, do you have a concern about the supply of diesel, and what do you think in terms of price spikes that you might be faced with?

Mr. ROGERS. Thank you for asking that question, Senator. The concern I really have is if we go back to just this past summer, as I stated in my testimony, in the St. Louis market, which I have some operations that operate in the St. Louis market, and I have some that operate outside of the RFG zone in St. Louis, when the RFG could not be supplied, because there were not enough tanks and not enough manufacturing capacity in the refineries, there were price differentials as much as 25 cents per gallon, from RFG to regular unleaded gas, just this summer alone.

Three times, the EPA did away with its rule to give some relief to the St. Louis market because of the high price and spikes of gasoline factors.

Now we see the same thing in diesel fuel, as there are no more tanks. There has been 25 years since any modern refinery has been built. More and more, the majors are getting out of the refinery business.

We have got to have more tanks. If we bring in more supplies of diesel, we have got to have more refining capacity. It is just not there out there in the market today to do it, and it will cause severe price hikes.

Senator INHOFE. I am going from memory now, but I think it was from the last hearing that we had, that since 1990, we have gone down in numbers of refineries from like 200 and some to 158.

Mr. ROGERS. That is correct.

Senator INHOFE. So it is moving in that direction.

Mr. Kassel, in your statements and your enthusiasm for this rule, would you think that they should have gone even further than they went, in proposing this rule?

Mr. KASSEL. Well, there are some technical issues, which I have addressed in my written statement today. There are ways that we could make it even tighter.

I think there are arguments, for example, for implementing the NOx standard all at once, in 2007, rather than stretching it out over 4 years of time. I think there are very important arguments for developing a very strong in-use compliance program, which I address in my written testimony.

There is a lot of debate about whether the new diesels are clear or dirty, or clean enough or not quite as dirty, as we say, and what not. Those are healthy debates.

One of the most important issues in that debate is the issue of in-use submissions. Engines are certified at a certain emission level, when they are new. The theory is that based on a certification level, that engine will produce a certain amount of emissions over its 435,000 mile life.

What we see from the limited in-use emissions data that is out there is that in the real world, that does not happen, for a variety of reasons that have to do with the way the engines are designed.

Senator INHOFE. OK, well, let me ask it in a different way. Would you want to go further than the EPA is going with this rule, if you knew for a fact that it would create shortages and price spikes?

Mr. KASSEL. Well, I would like to address the shortages and price spike issue.

Senator INHOFE. First, answer the question that I have asked.

Mr. KASSEL. The answer is, I think that EPA's proposal is fantastic, as is.

Senator INHOFE. No, just answer the question, would you want to go further than the current proposal, if you knew for a fact that it would result in shortages and price spikes? That is a yes or no question.

Mr. KASSEL. No, no.

Senator INHOFE. All right, and the second part of the question would be, if we were to determine that the current rule will cause price spikes and shortages, would you change your position in supporting it?

Mr. KASSEL. I think it is very hard to know whether there will be price spikes. I would like to just touch on that for a sentence or two.

Senator INHOFE. Well, OK.

Mr. KASSEL. There are many, many examples in the environmental history over the last three decades, where before a policy was implemented, industries were concerned about supply, availability, prices, feasibility, and so on. That is appropriate, in the advocacy arena.

At this point, EPA, this subcommittee, Congress, is trying to decide what is the right policy for the nation's diesel fuel and diesel engines. I think that the give and take is absolutely appropriate. I think that it is natural in that context for an environmental

group, such as ours, to advocate for the best environmental protection.

It is also logical for fuel suppliers, engine companies, affected industries to say, what is the worst case scenario; what is the absolute worst case scenario? I think what we have here and what we have seen, time and time again, is the worst case scenario is being laid out.

Senator INHOFE. But I would have to ask the further question then, since there is such a rush to do this in this short timeframe, and there is not time to determine, or at least I do not think there is, what effect it is going to have as far as price spikes or shortages, which are about the same thing, then it would seem to me, you have to use the worst case scenario, unless you have time to develop a more accurate scenario.

It may be a worst case scenario, but it stands to reason, that if it is a supply and demand situation, sure, we can say that it is only a nickel a gallon, if it is the cost of changing your equipment and marketing.

But if it has the deteriorating effect on the supply, right now, people are pretty sensitive to that. That is the reason for the question, and I wanted to frame it that way.

Mr. KASSEL. Right, well, I think this summer, we all learned a very important lesson about how markets respond to fuel changes. I think that the lesson, there are several parts of it.

First, I think that what we learned from the Midwest is that it was a market failure, and not necessarily a policy failure. Second, price spikes are multi-faceted. There are many factors that went into the changes in pump prices over the last year, and RFG is only one faucet of that.

Senator INHOFE. OK.

Mr. KASSEL. If I could just finish with that. I think the answer really is a national approach. Part of the problem with what we saw with RFG is that there are different fuels in different places.

We have heard today testimony that that is a real fear; having multiple fuels in a fuel supply chain that is designed for only one fuel. That is why we think the answer is not to stretch out the implementation, not to do a phase-in; but rather, to say, as of a date certain, diesel that comes into the refineries from import, or that is refined at the refineries would be low sulfur and so on.

Senator INHOFE. I would say this, as the chairman of this committee, my concern has been, with this Administration, the rush to getting into these things, the lack of sound science.

I have said several times that if we have a change in Administration, what I want do with this is to have the same goals, in terms of clean air, clean water, and it applies across the board. But I also want to have a cost benefit analysis, determine what it is going to cost, and use sound science.

You know, during the ambient air thing, the CASAC, the Clean Air Scientific Advisory Committee, there were 21 scientists. Only two agreed that those changes should be made at that time.

All I am asking for is the time to make these determinations, so we do not wake up with the spikes, and then all of a sudden say, hey, Inhofe, you were Chair on that committee that did not do what they could to be deliberate enough to get this done.

Let me ask you, Ms. Vujovich, we hear a lot about the problems imposed on the oil industry and the refining industry on the over-regulations. From an engine manufacturing perspective, what kind of effect does this have on you?

Ms. VUJOVICH. Well, Mr. Chairman, as you know, we are a regulated industry, and have been for quite some time. As you probably recall through the Clean Air Act, in the 1990 amendments, there are provisions that require a period of stability for our standards and a period of lead time. There is a period of 4 years of lead time and 3 years of stability.

So we have become a regulated industry that expects every three to 4 years to see some sort of environmental control. That is what we are confronted with today. We have standards that will be changed across the industry, between 2002 and 2004, and then this set of regulations proposed for 2007. As with most regulated industry, they become more and more difficult and challenging to meet.

So I would say, we do feel very regulated. We feel that the challenges are becoming more and more significant, and more and more costly. But it true that we would anticipate that, given the language in the statute.

Senator INHOFE. Thank you.

Mr. Rogers, in your testimony, I think you said that the compliance with this rule would cost, what, $100,000 for each service station?

Mr. ROGERS. When you take the cost of adding extra tanks, more pumps, monitoring systems, piping, all the detection system that were required in 1998, any upgrades, of course, have to meet those standards, or new installations have to meet those standards.

A truck stop cannot put in one dispenser. Trucking companies will now allow their trucks to sit in line for that length of time. The majority of truck stops have anywhere between eight to 16 or eighteen, up to 20 dispensers per location. You know, dispensers cost $10,000 or more each, plus all the supporting equipment that has to go with that. So you would have a great expense.

Now most people had to upgrade in 1998, and they are still trying to pay that off. They had to mortgage the house to meet these standards to stay in business, and they are still trying to pay those off.

Contrary to what Mr. Kassel says, the major oil companies are not operating these travel plazas and truck stops. They are mostly operated by small companies or small family organizations, that have mortgaged everything to stay in business after the 1998 change.

Senator INHOFE. Well, Mr. Kassel did characterize these costs as being extremely reasonable. Do you have a response to that?

Mr. ROGERS. Sir, I would like for him to pay our mortgage, and tell me it is extremely reasonable. It certainly is very costly. It is very expensive.

Yet, certainly, we are willing to make those necessary investments, because we also support every phase of that clean air point, but we have got to do it at a cost that we can continue to employ people and continue to operate a business.

Senator INHOFE. Mr. Williams, you know, Mr. Kassel talked about the exorbitant profits of, I believe, the 11 largest oil refiners.

Mr. WILLIAMS. Yes.

Senator INHOFE. How do you, as a small refiner, compare to these?

Mr. WILLIAMS. Well, I think he referred to the first quarter of this year. We and, I believe, all small refiners lost money in the first quarter of this year.

Senator INHOFE. You lost money on your financial statement in the first quarter?

Mr. WILLIAMS. Right, that is correct. I think most refiners did. In fact, the refining operations of the major oil companies lost money in the first quarter.

The reason the majors had good profitability in the first quarter of the year was because of the price of oil escalating. Keep in mind that the high price of oil means that you have a high raw material cost going into the refining business.

So those that have to buy that crude oil suffer the consequences of that, because there is no correlation between crude cost and product pricing at the tailgate of a refinery. It is all set by the market, and it is the law of supply and demand.

Senator INHOFE. Mr. Kassel, do you have any response to this?

Mr. KASSEL. Sure, I do. First of all, I just want to clarify that when I was talking about the reasonable costs that we think would be borne by the refineries, we are looking at that in terms of a comparison.

Senator INHOFE. So you were not talking about regional costs that would be borne by the institutions represented by Mr. Rogers?

Mr. KASSEL. Right, that point was about the refinery issue.

Senator INHOFE. Do you think those costs are reasonable? That was not addressed in your statement.

Mr. KASSEL. Well, it actually was briefly addressed. What I was trying to do, and it is outlined further in my written statement, is to try to answer or solve the problems that are posed by a multiple fueling situation; the problems of misfueling, the problems of fuel supply contamination.

Those are very real problems that the retail sellers and that the other distributors of diesel fuel would have to account for and pay for, if we went into a situation where we had multiple grades of diesel fuel.

I think every business has its own version of what is a reasonable cost for that year, for that quarter, or for that decade. But in thinking through a sound policy, what I have tried to do is answer the questions that are raised by the affected industries.

One of those is a real fear of fuel supply contamination; a real fear of having to invest in multiple fueling with pumps at each station. There is no reason for that, because a national program with a national fuel would obviate the need for those types of expenses.

That goes back to how we look at it, before a policy decision is made, and there is a lot of uncertainty as there is today; and after a policy decision is made, when businesses can properly account for what their capital expenditures will be. That is why we hope to finish the rule this year.

Senator INHOFE. OK, we are having a problem now because of the action of the Democrats on the floor. So I am just going to ask

one more question. Let us start with you, and just get a response to it.

If the rule is finalized, and I am talking about finalizing it at the end of the year, it would become effective in 2007. Because of all of these problems that we have here, I would like to have each one of you respond as to what would be wrong with delaying the finalization of this until some of these questions are answered, since it is not going to be going in effect until 2007, anyway.

Mr. Kassel, you may start first.

Mr. KASSEL. This proposal will require changes in every step of the fuel industry, the engine industry, the after-treatment industry.

Senator INHOFE. Maybe I need to rephrase that. In your response also, apparently, in 2003, there will be a technology review, which could change some of these things that they are starting to do, in order to comply with what they think is going to be required by 2007.

Go ahead. I am sorry.

Mr. KASSEL. Technologies have been used in the past by EPA to address some of these questions as they go forward. EPA just finished one in July. Technology review would be far preferable to delay.

Our concern is that this is a complicated program. We would hope that companies that are affected will have the maximum amount of time and the maximum amount of certainty on which to base their R&D programs, their capital expenditures, and so on. Every year that we delay, it means extra asthma and extra cancer. Those are avoidable, and that is our concern.

But it also means uncertainty for the companies that will be affected. It means they would be playing catch-up later. We would like to avoid that.

Senator INHOFE. We need time for the others.

Mr. Williams, do you have any response to that?

Mr. WILLIAMS. Yes, it is impossible to plan significant investments of this type, when you are undergoing technological review at the same time.

We are all going to have one shot at doing this, whatever the rule ends up being. To be forced, early on, to plan your capital investment contract and build, et cetera, at the time when you are undergoing technological review is going to be impossible.

There is going to be a big run on construction in this industry in the next 4 years. It is going to be very difficult to find contractors, get engineering, and all of that done with rash of investment that is going to have to be made.

If we are going to undergo technological review, which we need to and we are planning to, we definitely need to have a delay, in order to make sure we do it right the first time.

Senator INHOFE. In other words, change it so you would have that technology review before having to start into the expense of making your changes?

Mr. WILLIAMS. Exactly, because you cannot afford to get it wrong.

Senator INHOFE. Mr. Rogers?

Mr. ROGERS. Mr. Chairman, I still have questions as to why they rushed. We all know that we need to make further improvements and change the spectrum of what we are getting in sulfur.

The industry has stated they can readily take it to 50 parts per million from 500, which is a 90 percent reduction which, as stated before, was a 90 percent reduction from where it was prior.

We do not know what the effects of that are going to be on the asthma and so forth by reducing it that far. You are talking about a 7 percent factor difference between the 90 and 97.

Our concern is that the amount of investment that has got to be made by the refining industry is so drastic, to bring in that other 7 percent, as you said, we do not know what the technology is going to be and where it is going to be in that sector.

So our concern goes back again to we certainly have concerns about the imposition of this rule immediately by the end of the year. We do not think it is going to set it enough. We certainly have concerns that the EPA is rushing to get this done.

Senator INHOFE. Thank you, Mr. Rogers.

Ms. Vujovich, you have a different type of compliance requirements. What is your thinking on this?

Ms. VUJOVICH. Well, as you have mentioned and others have mentioned, there is an awful lot of uncertainly still surrounding this rulemaking. There is no doubt that there will be huge changes in the industry, whether it is the petroleum industry or the engine industry.

We, as an engine industry, understand that the next level of emissions control will require after-treatment systems. So there is no doubt in our mind that the next level of control will require after-treatment systems.

I want to dismiss anyone's notion that the industry will not be working on these things, absent a rule in place. By Mr. Kassel's own testimony, he referred to the work that is going on in Cummins' labs today, with development targets at least at the levels that EPA is proposing in the rulemaking.

So without a rulemaking, our individual shops have development targets at ultra-low levels. As an industry, we are ready to continue the development work, and understand the costs and understand the complexity in making sure that we can commit to 435,000 miles of emissions control, without a rule in place, but understanding that there is a technology that needs to be developed. We will subject ourselves to a review of that, as time goes on.

Senator INHOFE. Thank you very much.

Ms. VUJOVICH. Thank you, Mr. Chairman.

Senator INHOFE. One of the concerns that I have is, as an elected person, I face problems that bureaucrats do not face. That is, the price of gasoline, the price of fuels. They are going to be going up.

So I am going to make an observation so that later on, I can come back and read this out of the record as having said this on this date.

This week, the price of oil reached $37 a barrel. This is totally unprecedented, certainly, since the Gulf War. Even the Clinton Administration has predicted that home oil prices would raise by 30 percent this winter over last winter. I think it is going to be more

that. I have heard estimates as high as doubling the price over last year.

Crude oil stockpiles are at the lowest they have been since 1976. When President Clinton met with the Saudi Crown Prince Abdulla at the United Nations summit to request the Saudis to produce more oil, he stated that the high gas prices could trigger a recession. This is the President saying this.

One of the hidden causes of high oil prices are the numerous environmental regulations. For example, on June 5th, a Department of Energy memo revealed that the Clinton/Gore Administration knew that the environmental regulations were a major reason that gas prices jumped to record levels this summer, even though what you hear from Clinton and Gore and Carol Browner is that it is all the fault of big oil companies.

For those of you who doubt where the President and Vice President are on this issue, I will quote from Al Gore's book, Earth in the Balance: "Increasing taxes on fossil fuels is one of the logical first steps in changing our policies in a manner consistent with a more responsible approach to the environment."

The view of the Clinton/Gore Administration is, if you cannot increase taxes enough, then increase environmental costs instead.

I will repeat this one more time. We have some real legitimate concerns that we want to be addressed, that I do not know whether they can be addressed in that short period of time by the EPA. But we are going to send those to the EPA.

In the event they are not, then as soon as we get back in session, in the next session, I will invoke the Congressional Review Act, in order to keep this from being imposed on the American people.

Thank you very much. I am sorry we had to rush this, but it was something that we could not help. We are adjourned.

[Whereupon, at 11:25 a.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

[Additional statements submitted for the record follow:]

STATEMENT OF RONALD W. WILLIAMS, PRESIDENT, GARY-WILLIAMS ENERGY CORPORATION

Introduction

Good morning, Mr. Chairman and members of the committee.

My name is Ron Williams. I am President, Chief Executive Officer and an owner of Gary-Williams Energy Corporation, a Denver-based refining and marketing company. Our primary asset is a 50,000 BPD crude oil refinery in Wynnewood, Oklahoma. Companywide, we have about 275 employees and fall within the definition of small business refiner used for the Heavy Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements proposed by the Environmental Protection Agency in May of this year.

I have been asked to speak today on behalf of the oil and gas industry as a whole. We are members of both the National Petrochemical and Refiners Association (NPRA) and the American Petroleum Institute (API). NPRA represents virtually all of the US refining industry; API represents all sectors of the petroleum industry: exploration and production, transportation, refining and marketing. In addition, we served as a representative of an ad hoc coalition of some 15 small refiners producing diesel fuel during the SBREFA (Small Business Regulatory Enforcement Fairness Act) panel investigation into the impact of EPA's proposed rule on small business refiners.

General Industry Concerns

NPRA and API have previously testified before this committee and have devoted extensive resources to try to work with EPA and to analyze technical issues on this proposed ruling. The industry as a whole firmly supports the clean air benefits of

lower sulfur fuels. At the same time, however, the industry believes that the costs and benefits of these regulatory requirements must be carefully weighed in the context of their impact on energy supplies and the ultimate burden on consumers and the national economy. In short, we fear that EPA's haste to promote very sensitive engine technology is prematurely driving stringent and unreasonable fuel standards. We believe that a 15 ppm cap on diesel sulfur (effective in April 2006) will mean a sharp reduction of highway diesel fuel supplies, higher fuel prices and significant market volatility. In addition to those in the fuel industry, the rule will hurt all those who rely on highway diesel fuels, including truckers and distributors of goods and services. Diesel-fueled trucks and buses are the backbone of commerce in this country. The ultimate harm will be to consumers, jobs and the economy.

Among the key concerns shared by most of the refining industry are:

1. The 15 ppm diesel sulfur cap proposed by EPA is unreasonably stringent. To produce product consistently to that standard (allowing for inevitable operational disruptions), a refinery must in fact set itself a much lower cap. At least two things will happen: first, refiners choosing to produce for the highway market will incur significant capital and operating costs and consumers will experience about a 5 percent fuel economy loss; second, other refiners will be forced to limit or forgo participation in the highway diesel market. As a result, additional diesel volumes will be necessary just to match current demand.

2. The US fuel refining and distribution systems will not be able to expand to meet anticipated future demand. Refineries are now operating at over 95 percent of rated capacity which is approximately full sustainable capacity and this rule will shrink existing capacity. Forecasts (by the Energy Information Administration) are that US diesel demand will increase by 6.5 percent between now and 2007, gasoline demand will grow by 1.9 percent per year and jet fuel demand will rise by 3.2 percent per year. (Note: jet fuel is made mainly from high quality, light distillates and "competes" with diesel for blending components.)

3. Distribution problems will further reduce available supplies of ultralow sulfur diesel fuel and restrict the industry's ability to respond to any unexpected supply shortfalls. Potential for contamination in pipelines, barges, tankers, etc. will constrain shipment schedules and require more extensive interface cuts. EPA itself has suggested that some 2 percent of highway diesel may be downgraded to off-road fuel because of a required increase in pipeline transmix.

4. Importing additional diesel supplies to meet demand will be restricted because foreign producers will be unlikely to meet our more stringent sulfur standards.

5. Costs to meet a 15 ppm standard will be significantly greater than EPA projects. According to EPA, costs for diesel fuel under the new standard would be approximately three to four cents per gallon higher. API, however, projects incremental costs of 12 cents per gallon for diesel manufacturing ($8 billion in refinery capital investments) and an additional two cents per gallon for distribution expenses. API estimates that the capital costs to reach a 50 ppm standard (a 90 percent reduction in sulfur levels from today's standards) would be six cents per gallon higher than EPA forecasts but about half the outlay for the 15 ppm level.

6. Unable to make the huge investments required for a 15 ppm diesel cap and facing additional massive expenditures to meet almost simultaneous new regulations on gasoline sulfur, oxygenates and air toxics, some larger refineries will move out of the highway diesel market. Some smaller refineries will be forced to go out of business all together. The off-road market will be flooded with higher sulfur diesel. API has estimated that the shift away from on-road diesel could be in the 20 to 30 percent range. More production loss may result from refinery closures. Faced with the high cost of regulation and low rates of return, more than 25 U.S. refineries have already closed in the last 10 years.

7. The industry is in agreement that major supply shortfalls should be anticipated. Estimates range from 10 to 30 percent of projected demand. A just-released Charles River Associates (CRA) study suggests a nationwide average shortfall of more than 12 percent with particularly acute supply shortages at the regional level. On road diesel supply is projected to decline by 18 percent in Petroleum Administration for Defense Districts (PADDs) I, II (where our Wynnewood refinery is located) and III and by 37 percent in PADD IV, relative to the DOE baseline forecast of market demand in 2007. CRA estimates potential price increases in PADDs I-III of $0.54 to $0.80/gallon and potential price spikes of $1.56 to $2.28/gallon in PADD IV should an insufficient volume of imports be available to cover the loss of domestic production.

8. The effective date of the proposed diesel rule overlaps the period when refiners will be making major refinery modifications needed to meet new Tier 2 gasoline sulfur requirements. In addition to the major cost burdens imposed, almost simulta-

neous implementation of the standards will exceed the capacity of available engineering and construction resources.

Industry Recommendations

The refining industry has specifically urged EPA to take three critical steps:

- Conduct a thorough technology review (for engine and emission systems as well as refinery desulfurization technology) before finalizing the rule;
- Set reasonable and cost-effective standards for vehicles and fuels;
- Set an effective diesel sulfur implementation date that does not overlap the Tier 2 gasoline requirements.

The industry has no reason to believe that the Agency will respond to these urgent recommendations without congressional intervention.

Small Refiners' Dilemma

Small business refiners share the same concerns as the majors with this rulemaking, but our problems are much greater. There are fewer than 25 small refiners meeting the EPA definition (fewer than 1,500 employees and total capacity not exceeding 155,000 BPD).

There are also numerous small refineries owned by larger companies with significant crude oil production and/or significant retail outlets which they also own or control. In some cases the owners are in partnership with foreign producers such as Saudi Arabia and Venezuela. In addition, they own other much larger refineries.

The benefits that these major companies enjoy from their sheer size, diversification and integration are many:

- Easy access to both debt and equity capital;
- Lower cost of capital;
- Significant overhead savings and buying power with multiple refineries (e.g. utilities, operating supplied, engineering services, etc.);
- Ability for one segment of their business to subsidize or "carry" another segment; and
- Enormous "staying power".

For most of these major companies, their refineries are viewed as part of an integrated system. For example, several foreign producers have invested in US refineries to increase their market share of crude oil imports. Historically, profits from the major oil companies' crude oil production and retail marketing have subsidized the dismal rates of return on their refining assets. Many of the larger companies have publicly announced their desire to achieve a "balance" between the amount of refining capacity they own and retail distribution outlets they own or control. It is clear that the major oil companies' size, diversification and integration create a formidable, competitive advantage over the small refiners.

In short, small refiners are less able to raise the necessary capital and to endure the related increased operating costs which desulfurization investments will require; we face proportionately higher costs because we do not enjoy the same economies of scale; we cannot compete for limited construction and engineering resources. Many of us are also faced with meeting stringent Tier 2 gasoline standards in approximately the same timeframe.

In our case, for example, we estimate that Wynnewood refinery's capital costs to reach 15 ppm diesel sulfur will total approximately $48.5 million. In addition, our annual operating and maintenance costs will increase $6 to $7 million, an amount equal to our historic annual net income. Clearly there would have to be a significant increase in profit margins, which has not been the case with past environmental investments.

If we must comply with the Tier 2, Diesel and Air Toxics rules as issued or proposed, according to our best estimates, GWEC must finance capital expenditures totaling $87 million in a 5-year period between 2003 and 2007. Not included in this total is an additional almost $3 million capital expenditure which will be required by the fall of 2003 under MACT standards expected to be released in the next few months.

Importance of Small Refiners in a Vibrant National Oil and Gas Industry

Small business refiners believe this regulation will irreparably damage the competitive fabric of our industry and result in unnecessarily higher prices for diesel fuel consumers. Several will go out of business. In our case, the impact of this proposal is devastating and, if not amended, will ultimately cause us to shut down our refinery.

What then would result? The rapid and pervasive trend toward megamergers in the industry will continue unchecked. There will be fewer if any small independents able to provide competitive products and to challenge the majors' price increases. Historically, small refiners have not only often been the lifeblood of the small com-

munities in which they operate, they have served an essential function in providing pricing competition which requires the larger integrated companies to better meet the needs of the consuming public. Often the small independent provides the lowest wholesale price in the market for gasoline and diesel.

Also small refiners serve an essential national security function. In 1998/99, for example, small refiners (representing only about 4 percent of the diesel refining capacity in this country) provided almost 20 percent of the military jet fuel used by U.S. Military bases. Small refiners with defense contracts supplied almost 500 million gallons of jet fuel.

Extensive Effort Has Not Produced Comprehensive Small Refiner Solutions

Small refiners have worked diligently with the SBREFA panel and with EPA directly to outline the complex range of problems and circumstances facing the small refiner group and to underline as strongly as possible that there is no one solution that will enable all small refiners to survive. Wynnewood Refining Company, for example, is one of only a few small refiners without a distillate desulfurization unit. Because of the strong local agricultural, ranch and oil field markets, the additional desulfurization capacity has not previously been necessary.

Our many discussions with EPA staff, give us no reason to believe that the final rule will include adequate accommodation for the majority of small refiners. The apparent sensitivity of diesel engine technology now contemplated and the Agency's headlong rush to impose a rule immediately mean that there will be no opportunity for additional research and no incentive for the development of alternative technologies that might be equally as effective with slightly higher sulfur fuel.

Preservation of the Small Refiner Segment

Small refiners concur with the industry position summarized above. Like the industry as a whole, small business refiners are united in our belief that the costs, technical difficulties and tight timeframes imposed under the proposed diesel rule will push the US refining industry to limit production of ultralow sulfur highway diesel, cause supply shortages and price increases and flood the off-road market with higher sulfur product. This shift away from the on-road market will be substantial as many refiners decide to drop their Light Cycle Oil (LCO) into the off-road market rather than make the large capital investments required to process the entire stream to a 15 ppm cap. The related glut in the off-road market will reduce the price of off-road diesel and put many small refiners who rely on that market, like Wynnewood Refining Company, out of business.

As the industry has pointed out, the rational and preferred solution is to delay issuing the rule. If the Agency were to withdraw the rule to allow for more time to complete the research and thoughtful analysis needed, a more thorough investigation of highway diesel supply questions and antidumping provisions could be undertaken and subsequently public comment could be invited.

If, however, EPA proceeds with the rulemaking, small refiners urge EPA to adopt anti-dumping provisions in its final rule, to preserve the small refiner segment and to mitigate the very real probability that the supply of highway diesel will be reduced. One suggestion is to limit sales of high sulfur diesel into the off-road market to a refiner's current volume or some appropriate baseline. Additional sales into the off-road market would be allowed, but the sulfur standard for incremental volumes would be whatever cap is adopted. Small business refiners, who produce only about 4 percent of the nation's diesel and who market almost exclusively in attainment areas, would be exempt from this provision. This sort of anti-dumping provision would provide certainty that the on-road market would be first priority and therefore adequately supplied since there would be no economic incentive to dump incremental diesel into the off-road market. Such a provision would have no material environmental impact. In fact, because LCO is at the high end of allowable off-road sulfur levels, without an antidumping provision, off-road pollutants would probably increase.

Access to Capital

Whatever provisions EPA adopts for small business refiners will not be sufficient to keep all of us in business. We must have help to finance these incredibly costly regulations. We ask that Congress and the Administration fully realize the ramifications of this rule to the small refiner. The extraordinary costs involved will result in small refinery shutdowns, and less competition in the market place. If EPA is allowed to proceed, we ask that Congress and the Administration consider providing tax credits, loan guarantees and other provisions to assist small business refiners.

For example, among the types of assistance that should be considered:

- $0.05/gallon excise tax credit or an income tax credit for small refiners to defray costs of an investment in desulfurization technology; and

• Increase in SBA maximum loan guarantee on pollution control loans from $1 million to $10 million or higher.

Conclusion

In conclusion, the refining industry, including the endangered small business refiners, believe that this rule must be subject to much more extensive review than the Agency's current timetable will allow. Without some delay to allow the complex analyses of engine technology, desulfurization technologies and costs and supply disruption probability, this country can expect to see price spikes, fuel shortages and consumer outrage that may make recent protests in the midwest and Europe look mild in comparison.

Thank you for the opportunity to express these views.

STATEMENT OF PAUL ROGERS, CHIEF OPERATING OFFICER, VOSS COMPANIES, INC. ON BEHALF OF NATSO, REPRESENTING AMERICA'S TRAVEL PLAZAS AND TRUCKSTOPS

Good Morning Mr. Chairman and members of the subcommittee. My name is Paul Rogers, and I am the Chief Operating Officer for Voss Companies, a small family owned company based in Cuba, Missouri. Thank you Mr. Chairman for inviting me to testify today on the Environmental Protection Agency's Proposed Regulations which would reduce the sulfur content of highway diesel fuel.

Voss Companies owns and operates 3 truckstops in the Midwest, along with a small chain of convenient stores. We employ 275 people throughout our operation, and sell approximately 45 million gallons of diesel fuel at retail every year.

With over 26 years of personal experience in the truckstop industry, I appear before the subcommittee today on behalf of NATSO, the national trade association representing the travel plaza and truckstop industry. NATSO represents nearly 400 companies, which operate approximately 1,200 travel plaza and truckstop locations nationwide.

As the primary retailer of highway diesel fuel, the truckstop industry is a vital link in the transportation of goods and services throughout our country. The vast majority of our nation's products are delivered by diesel powered vehicles; everything from the clothes we wear to the food we eat. Our nation's travel plazas and truckstops are a critical link in the movement of these goods, providing the fuel needed to keep these trucks, and our economy, running smoothly.

In an effort to improve air quality, EPA has proposed that the sulfur content of all highway diesel fuel sold to consumers be reduced from its current level of 500 parts per million to just 15 parts per million beginning in 2006.

While the travel plaza and truckstop industry supports efforts to reduce emissions, NATSO has serious concerns and objections with EPA's proposed diesel sulfur regulation and the effect it will have on our nation's energy supply and delivery system. As proposed, EPA's rule will reduce overall supplies of diesel fuel, lead to significant spot outages, and significantly increase the cost of diesel fuel and other distillates.

NATSO is very concerned that this drastic 97 percent reduction in the sulfur content of highway diesel fuel will seriously disrupt the truckstop industry's ability to consistently and reliably acquire highway diesel fuel for sale in our nation's vehicles.

The investment which refiners will need to make in order to reduce sulfur levels by 97 percent may force many refiners to opt out of the highway diesel market and instead focus on other market segments for product production. Further, some refineries may cease operations altogether. With our nation's current fuel supply strained as it is, the loss of any additional diesel production and supply would be devastating.

Additionally, due to its integrated structure, it does not appear that our nation's diesel fuel distribution system could maintain ultra-low sulfur highway diesel fuel supplies in all areas of the country on a reliable basis. This serious problem could lead to fuel cross-contamination, spot outages of highway diesel fuel, and severe price spikes.

Furthermore, under EPA's proposed 97 percent reduction in sulfur levels, domestic highway diesel fuel will have a lower sulfur level than highway diesel fuel produced in most other nations. This would essentially prohibit the influx of foreign supplies of diesel fuel which could otherwise be used to ease shortages in domestic production and supply.

Ultimately, under EPA's proposal, less diesel fuel will be produced and supplied, driving up prices and costs, and endangering the integrity of our nation's energy supply and delivery system.

Truckstop operators—a critical link in the movement of goods and services throughout our nation—must be able to reliably acquire diesel fuel for re-sale to not only remain a viable and important part of our nation's fuel delivery system, but to ensure that adequate supplies of diesel fuel are available to power our country's vehicles.

EPA, in a misguided attempt to address the problems which would result from the extreme sulfur reductions proposed, has sought comment on various phase-in schemes which would result in the temporary manufacture, sale, and use of two separate grades of highway diesel fuel. These scenarios would allow the current 500 parts per million highway diesel to continue to be produced alongside the new ultra-low sulfur diesel for a period of years until it is eventually phased out in favor of the new ultra-low sulfur fuel.

NATSO is strongly opposed to these phase-in schemes, as they would prove devastating to the entire diesel fuel distribution system, including travel plazas and truckstops, while having the net effect of further reducing the supply of diesel fuel available at retail.

It is critical to note that the entire diesel fuel delivery system, from refinery to retail, is currently handling a single grade of highway diesel fuel. Because the travel plaza and truckstop industry is also configured to carry a single grade of highway diesel, the introduction of a second separate grade would force the truckstop industry to make tremendous capital investment to carry both products at retail.

Significant expenditures, over $100,000 per location in many cases, would need to be made to ensure that these separate grades of diesel are properly segregated to prevent their cross-contamination, and to avert misfueling at the pump. This would result in the need for new storage tanks, the re-piping and re-manifolding of tank lines, new pumps and monitors, and other significant compliance expense. In many cases, the permits for such a mandate would be unattainable.

Furthermore, these costs, which would be borne by an industry which largely consists of small independent owner/operators who are still recovering financially from the 1998 underground storage tank upgrades, would prove to be unrecoverable due to the temporary nature of the two fuel system.

The introduction of a second grade of highway diesel could therefore force many truckstop operators out of business, and have the additional effect of further reducing diesel fuel supply.

NATSO urges the subcommittee to express to EPA your opposition to these phase-in schemes which would result in the temporary manufacture, sale, and use of two separate grades of highway diesel fuel. These phase-ins will place at risk the integrity of our nation's diesel fueling infrastructure, raise costs throughout the distribution chain, and reduce overall supplies of highway diesel fuel.

NATSO does support efforts to improve our nation's air quality without placing our energy supply and delivery system at risk. The petroleum industry has stated its support for a 90 percent reduction in sulfur levels from 500 parts per million to 50 parts per million. Such a reduction, if it occurs without a two-fuel phase-in scheme and with sufficient lead-time for refiners and emission control manufacturers, would achieve significant reductions in emissions, while maintaining the integrity of our nation's diesel fueling infrastructure.

On behalf of NATSO and the truckstop industry, I again thank the subcommittee for holding this important hearing. I would be happy to answer any questions from the subcommittee.

STATEMENT OF RICHARD KASSEL, SENIOR ATTORNEY NATURAL RESOURCES DEFENSE COUNCIL (NRDC)

HIGHWAY DIESEL FUEL SULFUR CONTROL REQUIREMENTS—EPA DOCKET NO. A-99-06 [1]

I. Introduction

Thank you for the opportunity to testify today on EPA's diesel fuel and emissions proposal. At NRDC,[2] we believe strongly that EPA's diesel proposal offers a once-in-a-generation opportunity to significantly cleanup one of America's most enduring pollution problems. Given the critical importance of the diesel trucking industry to

[1] 65 Federal Register 35430 (June 2, 2000) (the "Proposal"). Abbreviations not defined herein shal have meaning attributed to them in the Proposal.

[2] The Natural Resources Defense Council (NRDC) is a national, non-profit environmental advocacy organization. Founded in 1970, NRDC has over 400,000 members nationwide, and offices in Washington, DC, New York City, Los Angeles, and San Fransisco.

our nation's economic health, it is essential that EPA act as quickly as possible to ensure the nation that its trucks and other diesel vehicles are as clean as possible.

NRDC has been working to clean up diesel emissions since the mid–1970's at about the same time as we were spear-heading the campaign to remove lead from gasoline. The connection between our lead campaign and EPA's current proposal is an important one: Just as lead in gasoline was the barrier to cleaner cars in the 1970's, sulfur in diesel is the barrier to cleaner trucks and buses in this decade.

NRDC strongly supports EPA's proposal for a very simple reason EPA's proposal means cleaner air and better health for all Americans. By mid–2006, 97 percent of the sulfur in diesel fuel would be eliminated, and starting with the 2007 model year, asthma attack-inducing soot particles would be slashed by 90 percent. By the end of the decade, tailpipe emissions of smog-forming nitrogen oxides (NOx) would be cut by 95 percent. These emission reductions will be the equivalent of removing the pollution from 13 million of today's trucks from the roads,[3] and will result in the elimination of 2.8 million tons/year of NOx, 305,000 tons/year of non-methane hydrocarbons, and 110,000 tons/year of particulates.[4] This will bring critical relief to the more than 120 million Americans live in areas that don't meet EPA's health standards for ozone and/or particulate matter.

The key to the success of EPA's Proposal is the desulfurization of today's high-sulfur diesel fuel: Just as a small amount of lead in gasoline disables automobile catalytic converters, even a small amount of diesel sulfur will disable the most promising emission controls for nitrogen oxides and will make the soot controls less effective. In other words, a smaller, compromised sulfur cut (as suggested by oil interests) would render the EPA's proposed PM and NOx targets unachievable, but EPA's proposed 97 percent sulfur cut would make the air cleaner in every State of the nation.

Undoubtedly, the oil industry and its allies will continue their fight until the end of the year, hoping to push this Proposal into the next Administration. They are fighting against cleaner air and improved public health—even though the oil industry earns more profits in a single quarter of a single year than its own estimated costs of compliance for the entire 10-year roll-out of the Proposal, and even though the past three decades of environmental regulations are filled with examples of air pollution regulations that did not cost nearly as much as industry advocates had previously estimated.

EPA and the administration should continue to hold firm because it is on the verge of a historic environmental victory. When it happens, removing sulfur from diesel fuel will be the biggest vehicle news since the removal of lead from gasoline. By cleaning up every truck and bus in the nation, this should mean longer, healthier lives for asthmatics, and many other Americans, who currently hold their breath when a diesel truck or bus blows by and who fear the summer's first ozone alerts far more than they should.

However, NRDC believes strongly that the Proposal—and EPA's overall program to reduce diesel emissions—can be improved in the following ways: (a) remove the 4-year phase-in of the NOx standard, thereby implementing this standard fully in 2007; (b) improve the in-use compliance and enforcement program, to ensure that engine and vehicle certification emissions more accurately reflect in-use, real-world emissions levels (c) ensure that the NTE limits and other compliance mechanisms of the 1999 Consent Decrees do not expire in 2004; and (d) add a series of incentives for the increased use of advanced technology and alternative fuel vehicles in urban fleets, especially transit buses, sanitation trucks and delivery vehicles.

II. The Health Threat of Diesel Emissions

The reasons for our concern about diesel emissions are clear. In our view, diesel's excessive quantities of particulate matter (PM), NOx and toxic emissions are probably the most serious air pollution threat facing many Americans, particularly in many urban areas.

More than fifty studies show links between particulate matter generally and a wide range of health impacts, including increased asthma attacks and emergencies, endocrine disruption,[5] numerous cardiopulmonary ailments, cancer and premature death.[6] Nitrogen oxides contribute to ground-level ozone formation, acid deposition,

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[3]Statement of EPA Administrator Carol M. Browner, May 17, 2000.

[4]65 Federal Register 35430 (June 2, 2000).

[5]*Endocrine/Estrogen Letter*, June 2, 2000, p. 6. Researchers at the Science University of Tokyo found testicular abnormalities in male mice that inhaled diesel exhaust.

[6]NRDC, *Exhausted by Diesel*, Third edition, May 1999, pp. 5, 8.

nutrient pollution of waterways, and secondary (i.e., atmospheric) formation of particulate matter.

While numerous studies have concluded that the particulate matter and nitrogen oxide emissions in diesel exhaust are harmful to human health, NRDC is increasingly concerned about the growing evidence that diesel particulates are associated with increased cancer risk. Diesel exhaust has long been considered to be at least a probable human carcinogen by the National Institute of Occupational Safety and Health (NIOSH) and the World Health Organization's International Agency for Research on Cancer (IARC).

In the past 2 years, three actions by various government bodies moved the nation further along this path: In July, EPA staff reiterated its prior conclusion that diesel exhaust is a likely human carcinogen, based on compelling epidemiological studies.[7] We expect the Clean Air Scientific Advisory Committee to finalize its work on this document at its October meeting. In August 1998, the California Air Resources Board (CARB) formally declared diesel particulate exhaust to be a toxic air contaminant.[8] And in December 1998, the National Toxicology Program advisory board recommended that diesel exhaust particulates be listed as "reasonably anticipated to be a human carcinogen" in the ninth edition of the congressionally mandated Report on Carcinogens.[9]

Diesel's link to cancer results in thousands of avoidable cancers nationwide. The association of the nation's State, territorial and local air pollution officials estimates that current levels of diesel pollution result in over 125,000 potential lifetime cancers nationwide, based on their extrapolation of the MATES-II study.[10]

NRDC is also especially concerned about the growing incidence of asthma in our nation, as well as the association between diesel particulate matter and asthma attacks. A recent study estimated that asthma cases will double by 2020, hitting one out of every five American families.[11] Nobody knows what causes asthma, but numerous studies have found associations between pollution (i.e., both ozone and particulate levels) and acute respiratory symptoms, including asthma attacks and hospitalizations.[12]

III. NRDC Strongly Supports the Proposed National Sulfur Limit of 15 parts per million (ppm), Starting in mid–2006

NRDC strongly supports EPA's proposed national sulfur cap of 15 ppm in mid–2006. In fact, NRDC has previously testified that EPA should adopt a national sulfur cap of 10 ppm.[13] NRDC would strongly oppose any sulfur level above a cap of 15 ppm because such a sulfur level would disable NOx adsorbers[14] and other promising NOx and PM controls, and would reduce the effectiveness of continuously regenerating PM traps and other promising emission controls.

Our opposition to higher sulfur caps derives from the simple truth, noted above: Just as a small amount of lead in gasoline disables automobile catalytic converters, even a small amount of diesel sulfur will inhibit or disable the most promising NOx emission controls and will make PM controls less effective.[15] Because sulfur-sen-

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[7]U.S. EPA, Office of Research and Development, Health Assessment Document for Diesel Emissions, EPA/600/8–90/057E, July 2000, SAB Review Draft.

[8]California Air Resources Board, Resolution 98–35 (listing of diesel particulate as a toxic air contaminant), adopted August 27, 1998.

[9]See <http://www. dieselnet.com/news/9812ntp.html>

[10]State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), Cancer Risk from Diesel Particulate: National and Metropolitan Area Estimates for the United States March 2000. This report was based on calculations of cancer risk first published in South Coast Air Quality Management District, Multiple Air Toxics Exposure Study (MATES-II, Draft Final Report, November 1999.

[11]Pew Environmental Health Commission, Attack Asthma: Why America Needs a Public Health Defense System to Battle Environmental Threats, May 2000.

[12]Regarding ozone associations, see, e.g., Gilmour, M.I., "Interaction of air pollutants and pulmonary allergic responses in experimental animals," Toxicology 1995 Dec 28; 105(2-3): 335-42; regarding PM associations, see, e.g., Nel, A.E., Diaz-Sanchez, D., Ng, D., Hiura, T., Saxon, A., "Enhancement of allergic inflammation by the interaction of diesel exhaust particles and the immune system," J Allergy Clin Immunol 1998 Oct; 102 (4 Pt. 1): 539-54:

[13]See NRDC Comments on EPA Proposed Rule No. A-98-32, submitted at EPA's hearing in Philadelphia, PA on November 2, 1999.

[14]NOx adsorbers are generally considered to be the most promising advanced NOx emission control technologies in development. They were originally developed for stationary sources and have been used in lean-burning gasoline-fueled direct injection engines. Other than an ultra-low sulfur diesel fuel, no further infrastructure changes are necessary with NOx adsorbers—a distinct advantage over SCR, discussed further below.

[15]NRDC notes that sulfur controls for engine lubricating oils may also be necessary, to ensure that advanced PM and NOx controls are not compromised by sulfur elsewhere in the system.

Continued

sitive emission controls will be affected more by their interaction with peaks of sulfur than by average sulfur levels, NRDC believes that EPA should focus its sulfur limits on caps, rather than averages.[16]

NRDC believes that a paradigm shift is required to sufficiently cleanup diesel emissions. Such a paradigm shift involves a "systems" approach to reducing diesel emissions evaluating fuel, engine and aftertreatment technologies together as a unified system to maximize the potential emission reductions from the entire "system." Reducing sulfur levels is the key to enabling a systems approach to reducing diesel emissions. Such an approach was critical to the success of last year's Tier 2 emissions and gasoline sulfur standards, and it is appropriately the principle behind today's Proposal.

In sum, implementing the new 15 ppm sulfur cap nationally by mid–2006 makes sense for at least four reasons:

First, only the near-elimination of sulfur (i.e., capped at 15 ppm) will create a fuel supply that is clean enough to adequately support the most promising PM and NOx emission controls like continuously regenerating PM traps and NOx adsorbers.

Second, a national approach to low-sulfur diesel is critical, given the mobility of the vehicles themselves. Because the presence of sulfur could disable NOx adsorbers and other emission controls, EPA must ensure vehicle operators that the on-road diesel fuel supply is as close to sulfur-free as possible, wherever the vehicle is operating.[17] With a national fuel supply, mislabeling, misfueling and fuel supply contamination concerns are eliminated thereby responding to the concerns of the nation's diesel fuel sellers.

Third, implementing the low-sulfur cap in mid–2006 ensures that the fuel supply of low-sulfur diesel will be adequate to service the first model year 2007 vehicles that are sold (typically, in the summer and fall preceding the calendar year). By requiring that all highway diesel fuel produced by refiners or imported meet the new sulfur standard by April 1, 2006, and that all highway diesel fuel at the terminal level meet the new sulfur standard by May 1, 2006, EPA is providing adequate lead time to ensure that all highway diesel fuel users are buying only the low-sulfur diesel fuel by June 1, 2006 and is providing a clear and useful road map to implementing the sulfur limits in a manner that avoids market disruptions that could occur if only a retail compliance date were provided.[18]

Fourth, a national low-sulfur diesel fuel will provide direct sulfate emissions reductions in pre-2007 diesel vehicles that do not have PM or NOx aftertreatment, helping reduce sulfate particulate matter, acid deposition (due to reduced sulfur dioxide emissions) and other harmful air pollution.

Predictably, the oil companies that fought unleaded gasoline in the 1970's and that would have to clean up their diesel fuels in order to help the nation's trucks and buses reach the new emission targets are crying foul. NRDC firmly rejects the oil's industry's suggestion of a 90 percent sulfur cut (to 50 ppm) because it would render the EPA's proposed PM and NOx targets unachievable.

Under the oil industry proposal of 50 ppm, PM traps are likely to suffer high failure rates, leaving oxidation catalysts that yield only a 20 percent PM reduction[19] as the most likely PM after-treatment technology. While some PM traps (including the most promising continuously regenerating traps) can operate at 50 ppm, trap clogging and failure is a serious problem at this level, due to the formation of sulfate PM. Fuel economy also suffers, as a result of increased regeneration needs. As a result, it would be difficult—if not impossible—for engine, aftertreatment and/or vehicle manufacturers and/or sellers to warrant such a trap for the full useful life of

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Today's lubricating oils have sulfur levels up to 8,000 ppm, which is estimated to be equivalent to 2-7 ppm diesel fuel sulfur. If the final rule includes the closing of all crankcases, a less-than-2 ppm diesel fuel sulfur contribution can be maintained. 65 Fed. Reg. at 35477.

[16]However, NRDC does not object to an additional limit on the average level of sulfur, so long as the cap of 1 S ppm is not increased.

[17]It is worth noting that, without a national low-sulfur diesel requirement, only centrally-fueled fleets will use sulfur-sensitive emission control strategies. Other fleets will not want to risk contaminating their engine systems with high-sulfur diesel fuel. Likewise, without a national low-sulfiu diesel requirement, diesel fuel sellers will be forced to operate two segregated fuel systems to avoid mixing fuels.

[18]NRDC notes that several fuel suppliers (e.g., BP, Tosco) have already signaled their intention to sell low-sulfur diesel fuel in California and elsewhere prior to 2006. In New York, the nation's largest operator of diesel transit buses will be using 30 ppm sulfur fuel by 2001 and has committed to using 15 ppm sulfur fuel as soon as it is available. NRDC assumes that, with proper incentives, other fleets would be early adopters of ultra-low sulfur diesel fuel once it is available, especially those who seek to participate in EPA or state retrofit/rebuild programs.

[19]Statement by EPA Office of Transportation and Air Quality (OTAQ) Director Margo T. Oge, June 19, 2000, as reported in the transcript of the New York hearing on the Proposal, pp. 53, 55.

the vehicle, and fuel economy-sensitive vehicle users might not welcome the technology. Consequently, in the event that EPA adopts a 50 ppm sulfur cap, manufacturers and sellers would be likely to opt for the less effective oxidation catalyst, rendering the proposed 0.01 g/bhp-hr PM standard unachievable.

Likewise, under the oil industry proposal, engine manufacturers and vehicle sellers would likely opt for selective catalytic reduction (SCR) as their preferred NOx after-treatment because it is less sulfur-sensitive than NOx adsorbers and other NOx aftertreatment technologies that are in development. NOx adsorber efficiencies are dramatically reduced when sulfur contacts the NOx storage bed. Perhaps for this reason, the Manufacturers of Emission Controls Association has testified that industry efforts to develop an effective NOx adsorber would cease if EPA adopts a 50 ppm cap.[20] While SCR seems capable of significant emission reductions, it also requires the development of a nationwide urea infrastructure that would cost billions of dollars to install, operate and maintain. As with oxidation catalysts, it seems unlikely that the proposed 0.2 g/bhp-hr NOx standard would be achievable with an SCR-only strategy.[21]

It is worth reiterating that the oil industry's 50 ppm sulfur limit would have a negative effect on the fuel economy of the nation's trucks and buses. For example, NOx adsorbers are expected to consume diesel fuel as they cleanse themselves of stored sulfates. As noted above, PM trap regeneration is inhibited by diesel fuel's sulfur leading to increased PM loading, increased exhaust backpressure, and decreased fuel economy.[22] In other words, the higher the sulfur cap, the lower the fuel economy.

Because they can't win on the science, the oil industry and its allies are making three arguments: The companies can't afford it; American consumers won't stand for it; and delay. Each argument is addressed briefly in the following paragraphs.

First, EPA estimates that its proposal will force the oil industry to spend, together, between $3 and $4 billion over the next six to 10 years to update their refineries to produce low-sulfur diesel fuel. Given that America's largest oil companies reported nearly $12 billion in profits in just the first quarter of 2000 (see Appendix A), this investment in cleaner fuels seems to be an extremely reasonable cost of continuing an extremely profitable business.

Second, some oil industry opponents of this Proposal have asserted that a 15 ppm sulfur fuel would create an undue cost on the American consumer. We disagree strongly. EPA has estimated that these rules could add up to four cents to the price of a gallon of diesel fuel over the course of the decade—hardly enough to derail the nation's strong economy. It is worth noting that BP—the nation's largest seller of diesel fuel—has reported that its 15 ppm sulfur fuel will be sold in California next year at an incremental cost of five cents/gallon, even without the economies-of-scale benefits of a nationwide fuel.[23] Tosco—the nation's leading independent refiner and marketer of petroleum products—recently announced its commitment to upgrading its California and Washington refineries to enable it to sell 15 ppm sulfur fuel in 2003 at a better return on capital for its investors than its current, high-sulfur diesel fuel.[24]

A recent American Lung Association/Clean Air Trust/Environmental Defense poll found that 85 percent of the American public would be willing to pay the incremental costs anticipated by EPA, BP and Tosco.[25] These costs seem especially reasonable once the benefits of eliminating 2.8 million tons/year of NOx, 305,000 tons/year of non-methane hydrocarbons, and 110,000 tons/year of particulates are factored in.[26]

Finally, Cummins and some other opponents of the Proposal are asking EPA to "slow down" the rulemaking process, i.e., that EPA should not rush to finalize these

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[20]Testimony of Bruce Bertelson, June 19, 2000, as reported in the transcript of the New York hearing (hereafter, "Bertelson testimony"), p. 56.

[21]EPA OTAQ Director Oge noted that EPA estimated that a 50 ppm sulfur limit would yield NOx reductions of 20 percent, presumably because of the perceived limits of SCR technology. See footnote 10 above.

[22]Memorandum from former EPA Official Michael P. Walsh to Interested Parties, May 17, 2000, p. 10.

[23]http://www.ecdiesel.com/keypoints.html; BP Amoco, press release, June 15, 2000.

[24]News article, "Tosco Corporation Announces Investment Program To Produce Clean Fuels On The West Coast," August 3, 2000,

[25]http://www.cleanupdiesel.org/bulletin.061600.html

[26]65 Federal Register 35430 (June 2, 2000). NRDC also notes EPA's estimated incremental vehicle costs of this proposal: $1,000-1,600 per vehicle over the long run. Given that heavy-duty buses now cost over $300,000 and that heavy-duty trucks can cost over $200,000, we believe that this is a reasonable cost of compliance.

rules this year.[27] These opponents claim that the PM and NOx technology has not been demonstrated, so EPA shouldn't act.

Already, the Manufacturers of Emission Controls Association (MECA) has testified in support of the proposed PM and NOx standards and has stated that it believes that its members will able to meet the requirements of this proposal in a cost-effective manner.[28] Given that MECA members are quite likely to develop and commercialize the PM and NOx aftertreatment controls, MECA's position should be given great weight by EPA and this subcommittee. Further, it is worth noting that the past three decades of environmental regulation are filled with examples of regulations that were opposed by regulated entities who said it couldn't be done, only to thereafter prove that it could be done and usually at a lower cost than initially estimated.

Cummins' position is troubling for another reason. There is evidence in the rule-making docket that suggests strongly that Cummins' presumptive emission targets are as low as EPA's proposed PM and NOx levels, and that it already believes that NOx adsorbers will work, that there are several approaches to sulfur management, and that a sulfur level of 50 ppm is deleterious to EGR systems.[29]

The bottom line is this: Technologies that require low-sulfur diesel are being commercialized and used in Europe and elsewhere, and are providing the health benefits of reduced diesel emissions in those places. Americans deserve the health benefits of these technologies. Every year of delay on industry's part means more avoidable asthma emergencies and more avoidable cancers.

It is worth noting that industry is not monolithic in its opposition to this Proposal. We note those industry associations and companies that have supported EPA's timetable and the move to ultra-low sulfur diesel (in some cases, supporting a move to a cap below 15 ppm), including the Engine Manufacturers Association, the Manufacturers of Emission Controls Association, the Alliance of Automobile Manufacturers, the California Trucking Association, International, TOSCO, BP, the Diesel Technology Forum, and others. We invite their peers to reconsider their positions of opposition to cleaner fuels, trucks and buses.

IV. NRDC Strongly Supports the Proposed Emission Standards for PM, NOx and Other Emissions from Diesel Vehicles and Engines in 2007 But With No NOx Phase-In

NRDC strongly supports EPA's proposed new standards for particulate matter and nitrogen oxides (0.01 grams-per-brake-horsepower-hour (g/bhp-hr) for PM and 0.2 g/bhp-hr for NOx, respectively). However, NRDC has strongly urged EPA to eliminate the 4-year phase-in of the NOx standard. NRDC also supports and applauds EPA's other proposed emissions standards (e.g., non-methane hydrocarbons, formaldehyde, complete vehicle standards, gasoline standards), as well as EPA's decision to include turbocharged diesels in the existing crankcase emissions prohibition.[30]

We have urged EPA to eliminate the NOx phase-in, for the following reasons.

First, by 2007, low-sulfur diesel fuel will be available nationwide, so there will be no fuel barrier to the national use of the most advanced PM and NOx controls. If the oil industry is required to complete its infrastructure and distribution investments by mid–2006 in order to provide fuel for model year 2007 vehicles and engines, it makes sense to require engine manufacturers and aftertreatment suppliers to work on the same timetable.

Second, implementing all of the new standards at the same time will minimize the cost and burdens of compliance. This is especially true for the engine manufacturers and after-treatment companies that will be commercializing new equipment to meet the proposed PM, NOx and NMHC standards, as well as California's upcoming urban bus standards. With one national, industry-wide compliance date, these companies will not have to maintain multiple production and recordkeeping operations, nor will EPA have to investigate the sales records of every truck and bus seller in the nation.

Third, other low-emission heavy-duty activities around the world—from the California Air Resources Board's urban bus standards to various upcoming European

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[27]Statement of Cummins Engine Company, June 19, 2000.

[28]See, e.g., Bertelson testimony, p. 48.

[29]Presentation of John Wall, Cummins Vice President, to EPA and the White House Office of Management and Budget, May 1, 2000. EPA Docket No. A-99-06, Document No. 2E-25, pp. 1, 2, 4, 8, 12.

[30]NRDC notes that EPA should not take any actions in this rule-making that would preclude further reductions from diesel engines and vehicles that may be necessary under EPA's mobile source air toxics program.

national and European Community low-sulfur diesel requirements[31]—will have created momentum for the commercialization of advanced emission control technologies elsewhere that will be applied to meeting EPA's requirements.

Fourth, States around the nation will be relying on the new NOx standards to meet ozone attainment and maintenance deadlines over the course of the decade. Public health imperatives in these States, combined with these States' legal obligation to meet their attainment and maintenance deadlines, require the implementation of the proposed NOx standard as expeditiously as practicable. It is not clear how States will be able to take SIP credits on a NOx standard that is implemented over a 4-year timeframe on a percent-of-sales basis. In contrast, a full phase-in of the NOx standard in 2007 would enable nonattainment areas to take full advantage of this Proposal's NOx standard in meeting their attainment and maintenance requirements.

V. In-Use Compliance, Testing Procedures and Enforcement

Setting more stringent tailpipe standards alone will not be sufficient to assure Americans that diesels are getting cleaner, so NRDC has urged EPA to ensure the strongest possible in-use compliance and enforcement program for the nation's trucks and buses. Thanks to the diesel engine industry's decade-long practice of designing and building engines that meet EPA's certification standards while emitting far-greater emissions on the open road, Americans continue to breathe excess NOx emissions from the current truck fleet. These excess emissions will add a wide range of serious public health impacts and costs, including an estimated 2,500 premature deaths, 5,000 hospitalizations and public health costs of 6–21 billion dollars over the lives of these vehicles. This widespread industry practice resulted in last year's consent decrees between the U.S. Government and seven major diesel engine manufacturers (collectively, the "Consent Decrees").[32]

Even beyond the deplorable industry actions that led to the Consent Decrees, several recent studies confirm that emission levels rise significantly as a vehicle ages and its parts deteriorate. One recent study found that actual NOx and particulate matter emission levels from heavy-duty diesel vehicles ranging in age from model year 1994 and later were as high as 12.5 g/bhp-hr and 0.6 g/bhp-hr, respectively.[33] This is surprisingly high, given that these same diesel vehicles had been certified at NOx and PM emission levels of 5.0 g/bhp-hr and 0.1 g/bhp-hr, respectively, only a few years earlier.[34] Even more telling, an analysis performed for this same study indicated that "in-use PM and NOx emissions for [tested vehicles] may not reflect the emissions improvements expected based on stricter engine certification test standards put into effect since 1985."[35] In other words, because diesel vehicles deteriorate with age but are never re-tested to ensure that they continue to comply with certification emission standards, EPA may not be realizing the intended air quality benefits from increasingly stronger certification standards.

NRDC notes approvingly that EPA recently finalized a rule (the "2004 Rule") that will require diesel engines to meet the not-to-exceed (NTE) limits in last year's Consent Decrees, new onboard diagnostics (OBD) requirements, a steady-state emissions test and other compliance and enforcement mechanisms (collectively, the "compliance mechanisms"), beginning in 2007.[36] However, NRDC is deeply concerned that the final 2004 Rule may leave a 3-year gap between the termination of the Consent Decrees in 2004 and the industry-wide implementation of the NTE limits

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[31]Sweden's Class I diesel is capped at 10 ppm sulfur; tax incentives are quickly reducing the sulfur in the diesel fuel supplies of the United Kingdom and Germany to a cap of 10 ppm; and the European Community is considering moving to a 10 ppm cap in the 2007-2008 time frame:

[32]Consent decrees filed in 1999 between the United States and each of Caterpillar Inc., Cummins Engine Company, Inc., Detroit Diesel Corporation, Mack Trucks, Inc. and Renault V.L, s.a., Navistar Internatianal Transportation Corp. and Volvo Truck Corporation.

[33]West Virginia University, Transportable Heavy Duty Vehicle Emissions Testing Laboratory, Exhaust Emissions Test Results Report of Raley's Distribution Center Tractors § 3.4 (September 1997) (hereinafter the "West Virginia Study"); Engine, Fuel, and Emissions Engineering, Inc., The Cleaner Choice: Natural Gas as a Substitute for Diesel (September 1999) (hereinafter "The Cleaner Choice") (converting West Virginia Study results from g/mi to g/bhp-hr). See also Colorado School of Mines, Chassis Dynamometer Study of Emissions from 21 In-Use Heavy-Duty Diesel Vehicles at 1, 9 (hereinafter the "Colorado Study"). The Colorado Study covered heavy-duty vehicles ranging in age from 1984-1995. As in the West Virginia study, the results were expressed in terms of g/mi. The Colorado Study results were similar to those of the West Virginia study; however, PM levels were found to be significantly higher.

[34]Id.

[35]Id. at 2, 14–15.

[36]EPA, Regulatory Announcement, Final Emission Standards for 2004 and Later Model Year Highway Heavy-Duty Vehicles and Engines, July 2000. See http://www.epa.gov/oms/regs/hd-hwy/2000frm/tn0026.pdf (the "2004 Rule").

and other compliance mechanisms in 2007 under the 2004 Rule's implementation schedule. Thus, we have urged EPA to take steps to extend the Consent Decrees until the codification of the NTE limits and other compliance mechanisms are fully implemented in 2007.

Even though the 2004 Rule is now final, NRDC stresses the importance of these points because of the interaction between the Consent Decrees, the 2004 Rule and this 2007 Proposal. It has been widely reported that at least some of the engine companies wish to weaken the NTE limits and perhaps other compliance mechanisms. NRDC continues to urge EPA to maintain a rigorous commitment to these mechanisms because they are the public's best protection against the kind of emissions "cheating" practiced throughout the 1990's and because they will help assure the public that real world, in-use emissions are being reduced as a result of the Proposal's new emissions standards and other provisions. To the extent that competitive issues underlie the companies' request for relief from the Consent Decree's NTE limits and other compliance mechanisms, NRDC feels strongly that the only acceptable resolution of these competitive issues is an industry-wide adherence to the NTE limits and the other compliance mechanisms, rather than carve-outs and exceptions that favor one company over another especially if such carve-outs result in competitive advantages for companies that have failed to remove the auxiliary emission control devices that were at the heart of the defeat device problem.

To summarize, NRDC strongly opposes any change to the NTE limits contained in the Consent Decrees, strongly opposes any weakening of the NTE limits or any of the compliance mechanisms in the 2004 Rule, and strongly urges EPA to apply the NTE limits and other compliance mechanisms to all heavy-duty engines and vehicles, regardless of the fuel used.[37] Further, NRDC strongly encourages EPA to take all necessary steps to extend last year's Consent Decrees until the NTE limits and other compliance mechanisms are implemented on a codified, industry-wide basis in 2007, including a strict enforcement of EPA's defeat device policy and returning to court if necessary.

Even under the 2004 Rule, it appears that heavy-duty engines and vehicles may only be tested once—when they are new. Regular, in-use testing—which would demonstrate whether engines or vehicles are remaining at certified emissions levels throughout their useful life—still will not be required under the 2004 Rule or this Proposal. NRDC continues to urge EPA to expand its in-use compliance and enforcement mechanisms to ensure that emissions from the nation's fleet of heavy-duty vehicles and engines do not deteriorate as these vehicles and engines age.

In closing, a more robust system of in-use emissions testing will become particularly important if and when emerging diesel technologies—including the PM traps, NOx adsorbers and other aftertreatment technologies envisioned by this Proposal—are certified.[38] Some of these technologies are still being developed, and they will be tested and commercialized in upcoming years. However, their long-term performance and reliability is not proven yet. This point cannot be overstated—regular testing and an effective compliance and enforcement program is critical to ensuring the proper operation of these new technologies and their abilities to reduce harmful emissions over their full useful lives.

VI. Advanced Technology and Alternative-Fuel Vehicle Incentives

As discussed above, emissions test data demonstrates a gap between certification and in-use emissions for heavy-duty diesel engines. This gap does not appear to exist for engines powered by alternative fuels, such as natural gas.[39] For example, the staff of the California Air Resources Board (CARB) concludes that diesel transit buses currently have in-use particulate emissions of approximately 0.23 g/mi, over ten times the 0.02 g/mi for natural gas buses[40]—even though the diesel buses certify to PM levels only two to three times higher than their natural gas counterparts.

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[37]NRDC also encourages EPA to adopt supplemental Federal test procedures (SFTP) standards for heavy-duty vehicles that would further enable EPA to limit off-cycle emissions from these vehicles. One element of such a SFTP adoption would be to consider SFTP standards for emerging hybrid-electric vehicles.

[38]An analogy to automobile emission controls is apt here: as automobile emission control systems have grown mare sophisticated, emissions deterioration and a system of diagnosing malfunctions in these systems have become extremely important issues. There is no reason to suspect that the introduction of advanced emission control technologies to the heavy-duty vehicle market will be any different.

[39]Based an data from the Alternative Fuels Data Center. www.afdc.doe.gov and Engine, Fuel, and Emissions Engineering, Inc. The Cleaner Choice: Natural Gas as a Substitute for Diesel, September 1999.

[40]CARB. Proposed Regulation for a Public Transit Bus Fleet Rule and Emission Standards for New Urban Buses, Staff Report: Initial Statement of Reasons, December 1999.

Zero-emission technologies, such as the fuel cell buses expected to be commercial by the time EPA's rule goes into effect, offer substantial, guaranteed air pollution benefits while also eliminating toxic emissions from the tailpipe, substantially cutting emissions of greenhouse gases over the total fuel cycle, and reducing reliance on foreign oil. Other advanced technologies, such as hybrid-electric vehicles, may also offer in-use emissions benefits if they are designed to reduce engine operating characteristics that lead to high emissions rates.

These intrinsically cleaner options are currently being demonstrated throughout the country in applications such as medium duty delivery vehicles, school buses, transit buses and waste haulers, and wider applications are expected within the next few years. We have urged EPA to ensure that its rule does everything it can to encourage these technologies and fuels by (a) revising to its averaging, banking and trading ("ABT") program (a program that permits engines that beat EPA's standards to generate marketable credits); (b) creating a separate, more stringent emissions standard for fleet vehicles (historically, transit buses have met more stringent emissions standards than other heavy duty vehicles, thereby providing greater health protection from diesel emissions in high-population urban centers); and/or (c) creating optional low-pollution standards (following California's lead, EPA should adopt optional low-pollution standards for diesel engines that would encourage the development of even lower-polluting engines, taking toxic and greenhouse gas emissions into account)

VII. Conclusion

NRDC looks forward to working with the subcommittee and all interested parties toward the successful finalization of this Proposal by the end of this year.

APPENDIX A

Big Oil's Big Profits	Company—First Qtr. 2000 Profits (rounded)
ExxonMobil	$3.35 billion
Royal Dutch/Shell	3.13 billion
BP Amoco	2.71 billion
Chevron	1.04 billion
Texaco	602 million
Conoco	391 million
Phillips	250 million
Marathon	199 million
Coastal	174 million
Sunoco	78 million
Tosco	75 million
Total	$11.99 billion

Source: Clean Air Trust

STATEMENT OF TINA VUJOVICH, CUMMINS INC.

EPA'S PROPOSED REGULATIONS FOR DIESEL FUEL AND HEAVY-DUTY ENGINES

Good morning. My name is Christine Vujovich. I am the Vice President for Environmental Policy and Product Strategy for Cummins Inc. Thank you, Mr. Chairman and members of the subcommittee, for the opportunity to appear here today to discuss the EPA's heavy-duty engine and diesel sulfur proposal. This is of great importance to Cummins, as well as to society at large due to its significant environmental and economic implications.

Cummins is the only independent diesel engine manufacturer in the United States and we are the world's largest producer of commercial engines over 200 horsepower. We share the goal of improving our air quality and we support the EPA's authority to regulate emissions from heavy-duty diesel engines. As a company, we are absolutely committed to pursuing technologies that benefit the environment. These technologies, however, must also provide the superior performance—including fuel economy—that our customers require.

This is why we have serious concerns about the rush to finalize the proposed rule by year's end. The schedule established by EPA is politically driven and does not allow time for the work that is necessary to assess the technical feasibility and commercial viability of technologies required to meet these standards.

We are urging EPA to provide an additional 18 to 24 months so that stakeholders can assess these issues, which are critical to the success of the ultimate rule. EPA can do this and still implement a rule for 2007. To proceed otherwise, however, would result in a rule that is unworkable and that undermines the important goal of reducing emissions and improving air quality.

For more than 20 years, my work at Cummins has revolved around the environment. It is a challenging job. We provide a technology essential to moving this nation's economy, but it is a technology that has environmental implications. That is why at Cummins we demand that everything we do lead to a cleaner, healthier and safer environment.

Our engineering and development budget each year is about 4 percent of our annual sales, and well over half of that goes directly toward environmental issues. This is a significant investment, but one that produces significant results.

I am proud to say that Cummins offers the largest portfolio of low emission and alternative fuel engines of any manufacturer. This includes building the first natural gas engine to be certified by the California Air Resources Board under its Low Emissions Transit Bus Standards and leading the industry in the provision of engines that are certified to meet EPA LEV and ULEV standards.

The work done at the transient emissions laboratory at the Cummins Technology Center is world-class, and our engineers are regularly called on to advise government experts worldwide, which we are pleased to do.

In the early 1980's, EPA developed its first transient test system based on the technology at Cummins' testing facility. When EPA needs to train its technical staff in the fundamentals of internal combustion, it turns to Cummins. Indeed, EPA researched the very rule we are here to discuss today on a Cummins six-liter engine.

Why is all of this important? While many of you in this room are familiar with Cummins, those of you who aren't don't know that it simply isn't our nature to say "NO." However, we are compelled in this instance to speak out loudly and to speak out strongly to say, "don't jeopardize the success of this rule in order to meet an arbitrary political deadline."

This rulemaking represents a lot of firsts.

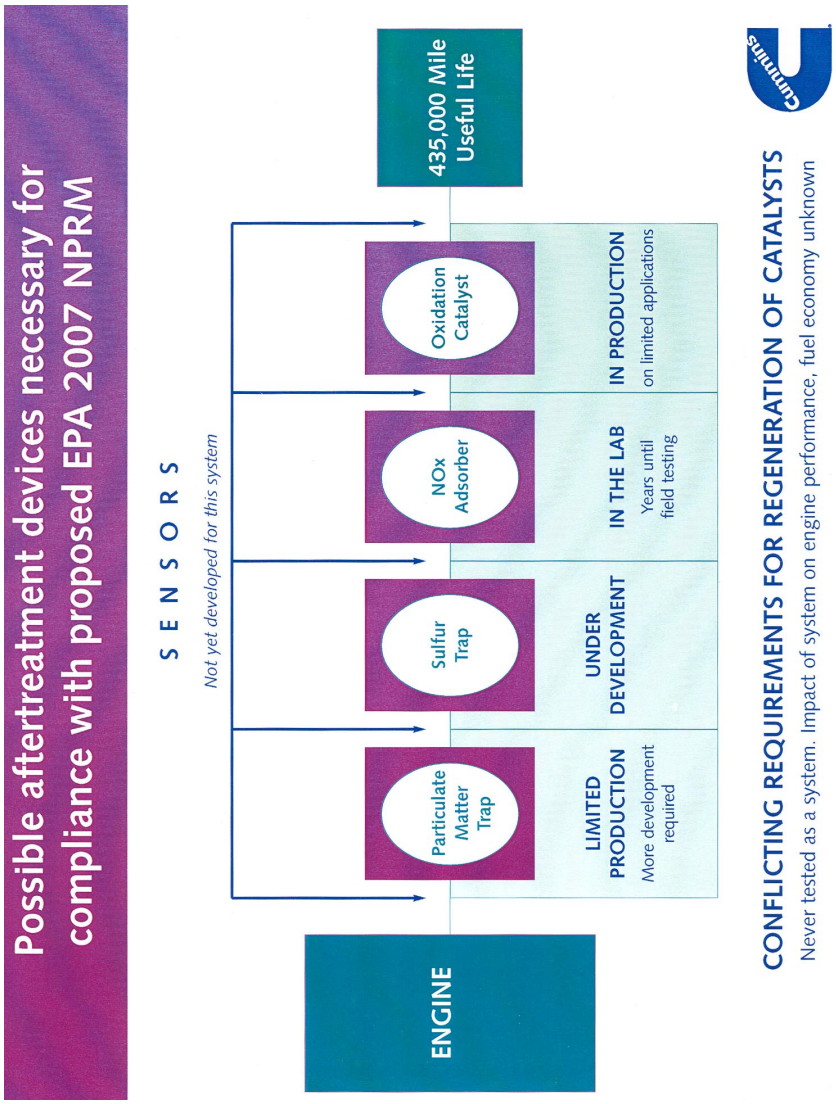
This rule for the first time recognizes that fuel and engine technology must work together to achieve emissions reductions. And, for this, we applaud EPA, because ultra-low NOx and ultra-low particulate standards cannot be met without a significant reduction in diesel fuel sulfur.

These are the biggest percentage NOx and PM emission reductions of any proposed rulemaking. They come on top of already significant reductions.

Most importantly, this is the first time that proposed reductions cannot be achieved through in-cylinder and engine sub-system control technologies. This is very significant for two reasons. First, in order to achieve the proposed reductions, engine manufacturers will have to rely on technologies that we neither make nor install. Second, these technologies do not exist today.

Cummins' current best estimate of the system of aftertreatment devices necessary for compliance includes four components: a particulate trap, a sulfur trap, a NOx adsorber and an oxidation catalyst. These devices, however, are in varying stages of early development. Particulate traps are in limited production with more development required. Sulfur traps being developed, but are not developed yet. The NOx adsorber is currently in the lab, but is still years away from field-testing. And, finally the oxidation catalyst is in production, but on limited applications. (See attached diagram)

We can neither evaluate the pieces individually nor as an integrated system with the potential to achieve the proposed reductions. Moreover, we can only guess as to what impact the envisioned system of aftertreatment technologies will have on engine performance, fuel economy and cost.



STATEMENT OF INTERNATIONAL TRUCK AND ENGINE CORPORATION

International Truck and Engine Corporation ("International") appreciates the opportunity to submit a statement in connection with the subcommittee's September 21, 2000 hearing on the U.S. Environmental Protection Agency's ("EPA" or "Agency") proposed model year ("MY") 2007 heavy-duty engine and vehicle standards and highway diesel fuel sulfur control requirements. This proposal, which EPA published on June 2 of this year, would require substantial emission reductions by heavy-duty engines ("HDEs") through a "systems approach" premised both on improved fuel quality and advances in engine technology.

EPA's proposed emissions targets are very ambitious. However, our company is making sizable investments to develop engine and aftertreatment technologies that have the potential to achieve major strides in emissions performance for both light-duty and heavy-duty diesel-powered vehicles. These technologies are extremely sul-

fur-sensitive and will only be effective with the availability of ultra-clean diesel fuel. EPA's proposed sulfur limit of 15 parts per million ("ppm") is the minimum level of sulfur reduction that can "enable" the commercial introduction of the emissions control technologies we are developing.

With the assurance of ultra-clean fuel in 2006, our company is prepared to make every effort to meet EPA's challenging HDE emissions targets for the 2007–2010 timeframe. Since the particulate trap is ready for commercial introduction today, we are confident that, with ultra-low sulfur fuel, we can achieve EPA's 2007 emission standards for particulate matter ("PM"). While the feasibility of NOx adsorber technology is more uncertain, we believe that EPA's proposed Nitrogen Oxides ("NOx") standards should be within reach assuming the 2007–2010 phase-in period under EPA's final rule gives us adequate time to mature this technology with clean diesel fuel.

International does not agree with all aspects of EPA's proposal. We have made detailed recommendations to EPA on how the rule can be improved. However, we support completing the rulemaking promptly on the basis of the extensive record developed by EPA. Postponing the rule is not needed for sound decisionmaking and would create uncertainties that delay investment in the next generation of fuel and engine technologies.

Who is International

International, formerly known as Navistar International Transportation Corp., is a major North American manufacturer of medium and heavy-duty trucks and buses marketed under the "International " brandname. International is the world's largest manufacturer of mid-range (160–300 hp) diesel engines. Our engines are more than 97 percent on-road certified. We supply these engines both to other International divisions and to other customers, including Ford Motor Company. International is Ford's exclusive supplier through the year 2012 of V–8 diesel engines for heavy-duty pickups. These heavy-duty vehicles would be subject to EPA's proposed MY 2007 emission standards for HDEs. We are also planning to supply V–6 engines to Ford for sport utility vehicles subject to EPA's recently issued Tier 2 rule.

Because our trucks and engines are 100 percent dieselized, we have long been a leader in diesel technology and were the first engine manufacturer to introduce several breakthroughs that are now common in the industry. We have also been a leader in environmental improvement and have pioneered many of the advances in emissions performance that diesel technology has recently achieved. We are investing hundreds of millions of dollars in the development of advanced engine and aftertreatment technology to improve engine performance and provide a cost-effective answer to clean air concerns for all the markets heavy-duty and light-duty where our engines are sold.

A major part of our technology program involves Green Diesel TechnologyTM, which utilizes the benefits of the catalyzed particulate filter ("CPF"') system and ultra-low sulfur fuel in combination with an exclusive International engine performance design to significantly lower the emissions and odor of diesel-powered buses and trucks. Last year, International conducted a demonstration of a CPF system on a school bus utilizing a heavy-duty diesel engine and run with a special ultra-clean blend of diesel fuel manufactured by BP Amoco. PM levels were reduced to below .01 g/bhp-hr a reduction well in excess of 90 percent from current levels, as well as 50 percent lower than the best 1998 certified compressed natural gas engine. Hydrocarbon emissions were also reduced below measurable levels (which eliminated the odor often associated with diesel engines).

We are pleased to inform the subcommittee that International's Green Diesel Technology school bus will be offered in 2001 in areas of the country where 15 ppm sulfur fuel is available. BP Amoco will provide the 15 ppm sulfur fuel in California and possibly elsewhere, thus ensuring that greatly improved emissions performance on these vehicles is achieved in the very near future.

With Ultra-Low Fuel Sulfur Levels, EPA's Proposed MY 2007 HDE Emissions Standards Represent Challenging But Reasonable Goals

EPA has proposed 90 percent reductions from 2004 levels for both NOx and PM emissions by the 2010 timeframe. These would be the largest step reductions ever mandated for either NOx or PM emissions from HDEs in the United States. These emission targets present enormous technical challenges, but there is no credible dispute that the aftertreatment technologies required to bring them within reach will function efficiently and durably only with ultra-clean diesel fuel. We therefore commend EPA for taking steps in the rulemaking to address the critically important issue of diesel fuel quality. Progressive oil companies including BP Amoco already are making commercially available diesel fuel with sulfur levels of 15 ppm or lower.

These oil companies have earned recognition and our applause for their efforts to bring clean diesel fuel to the marketplace well in advance of any regulatory requirement to do so.

Focussing on PM control, extensive data indicates that ultra-low sulfur fuel is a prerequisite to the effectiveness and durability of CPF technology, which we believe is the only viable path for reducing PM emissions in 2007 to the near zero levels called for under EPA's proposal. CPF operation is inhibited by sulfur in diesel fuel, as is total PM control effectiveness due to the formation of sulfate PM. Relevant experience with CPF technology, however, shows that ultra-low sulfur levels assure that CPF technology will perform efficiently and durably. As stated above, International has demonstrated the effectiveness of CPF technology, combined with ultra-clean fuel, in reducing PM emissions to levels at or below those proposed by EPA. By the same token, field tests conducted with higher (50 ppm) sulfur levels were much less successful, showing an unacceptable CPF failure rate of 10 percent. In sum, there is no question that the availability of ultra-low sulfur fuel is a critical "enabler" for CPF technology's ability to control PM emissions reliably during vehicle use. Nor is there any question that, when used with low sulfur fuel, this technology will deliver the emission reductions proposed by EPA and is ready for commercial introduction today.

NOx control presents greater challenges at this stage than reducing PM emissions. Here too, however, ultra-low sulfur fuel is essential for progress toward EPA's targets. The NOx adsorber is our technology of choice in meeting the MY 2007 NOx standards but its performance is extremely sensitive to sulfur poisoning. The Diesel Emissions Control Sulfur Effect program, which evaluated various sulfur-sensitive technologies and obtained data on high sulfate conversion levels at high speed and load conditions over a broad range of engine operating conditions, confirms this point. The test program's interim results indicate that, at sulfur fuel levels in excess of 15 ppm, NOx adsorber performance declines significantly after only 150 hours of testing. Diesel Emission Control Sulfur Effects Program, Phase I Interim Data Report No. 2: NOx Adsorber Catalysts, pp. 2, 23 (October 1999). By contrast, with diesel sulfur levels of 15 ppm and below, NOx adsorber technology promises to achieve a high level of emission reduction over a range of engine operating conditions. Accordingly, assuming our recommendations for improving the rule are adopted, International believes that EPA's NOx emission limits represent a challenging but reasonable goal that we should start working toward now using the technological resources and expertise of our industry, aftertreatment suppliers and the refining sector.

We do not accept the argument that fuel and engine requirements should be delayed until control technologies needing ultra-clean fuel have fully matured. For example, some in the refining industry have suggested that, since commercial application of the NOx adsorber technology is now unproven, it is premature to reduce diesel sulfur content to 15 ppm in the belief that clean fuel is needed to enable NOx adsorber technology. From our perspective, this concern misses the point. NOx adsorber technology certainly needs maturation but we know from available data that its commercial deployment by MY 2007–10 is a realistic possibility assuming the corresponding availability of ultra-low sulfur fuel. If fuel and engine requirements were delayed until the technology had been fully demonstrated, companies like International and their suppliers would not be motivated to make large investments in improved emissions performance and progress toward lower emissions would be stymied.

Although recent debate has focussed on the technical uncertainties surrounding EPA's proposal, there are two critical points that are not in dispute: (i) aftertreatment technologies for PM and NOx require fuel sulfur levels of 15 ppm or less to function effectively; and (ii) if these technologies cannot be used because clean diesel fuel is not available, the remaining technology options can achieve at best a 30 percent reduction in PM and NOx emissions. It is not our company's role to set national air quality goals. However, we can say with confidence that, if the public expects a 90 percent reduction in PM and NOx emissions as proposed by EPA, only a rule which maintains a dual focus on improved fuel quality and superior aftertreatment performance and sets aggressive targets for both will enable us to reach that goal.

Recommended Changes in the Rule

Our willingness to accept EPA's rule, however, is conditioned on adoption of the recommendations for modifying EPA's proposal that we have presented in our comments to the Agency. Of greatest importance, while EPA's proposal to phase-in NOx controls between 2007 and 2010 is a step in the right direction, we are concerned that as framed it would call upon the NOx adsorber to achieve a 90 percent emis-

sion reduction immediately upon commercialization. Experience tells us that it will be critically important to have a meaningful transition period during which the adsorber can mature in-use. Therefore, International has proposed that EPA set an interim NOx + NMHC standard of 1.40 g/bhp-hr for all MY 2007–2009 HDEs, with a further drop to 0.30 in MY 2010. In our comments to EPA, we have demonstrated that the International proposal would offer significant environmental benefits over EPA's approach of phasing in the NOx requirements for 25 percent of the fleet each year between 2007 and 2010. It should be emphasized that our proposed interim NOx limits for the MY 2007–2009 period and the PM emission targets proposed by EPA for 2007 cannot be achieved unless ultra-low sulfur fuel, at or below the 15 ppm level, is available in 2006.

We have also raised concerns with the proposed Not-To-Exceed ("NTE") requirements, which could not be met over the full range of engine operating and ambient conditions given the extremely stringent underlying emissions standards proposed for 2007 and beyond. Our comments further recommend that EPA remove restrictions it has proposed on the use of pre-2007 Averaging, Banking and Trading ("ABT") credits as well as make a number of smaller technical revisions. We hope our proposed modifications are receiving careful consideration by the Agency as it develops a final rule.

EPA Should not Delay Issuance of a Final Rule

Although we recognize the complexities and challenges presented by EPA's 2007 fuel and HDE proposal, our company is already committing hundreds of millions of dollars to development of advanced emission control technology that, with the availability of ultra-clean fuel, can "enable" the commercial introduction of the CPF and NOx adsorber technologies. International believes that, to continue this progress, the engine industry, aftertreatment suppliers and refiners need the motivators provided by clear long-term performance goals for both engines and fuel.

Extended study of the issues and rulemaking delays will create uncertainties and inevitably slow down the R&D programs that will lead to improved emissions performance. For example, without knowing what level of sulfur reduction will be required and when cleaner fuel will be available, our industry could not determine what emission control technologies to pursue and how great our investment in these technologies should be. The aftertreatment industry would likewise be unable to focus its R&D efforts on the most promising aftertreatment devices since it would be uncertain what level of sulfur reduction would be available to "enable" these devices to perform effectively. Accordingly, delaying this rule for another year or 18 months is unlikely to move us closer to answers but could reduce the lead-time which our engineers and production managers have to implement the new requirements.

Extended study of the issues and rulemaking delays will create uncertainties and inevitably slow down the R&D programs that will lead to improved emissions performance. For example, without knowing what level of sulfur reduction will be required and when cleaner fuel will be available, our industry could not determine what emission control technologies to pursue and how great our investment in these technologies should be. The aftertreatment industry would likewise be unable to focus its R&D efforts on the most promising aftertreatment devices since it would be uncertain what level of sulfur reduction would be available to "enable" these devices to perform effectively. Accordingly, delaying this rule for another year or 18 months is unlikely to move us closer to answers but could reduce the lead-time which our engineers and production managers have to implement the new requirements.

Conclusion

In sum, International believes that the rulemaking process for the proposed HDE rule has created a full record on the critical questions EPA must resolve and provides a sufficient foundation for decisionmaking. While we support certain non-fuel related changes in EPA's rule so that its requirements are more reasonable, prompt completion of the rulemaking is a high priority for our company so that we can move forward with our advanced technology program. Accordingly, International urges that any move to slow down completion of the rulemaking or ease the requirements for ultra-low sulfur fuel should be rejected.

○